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NEWS 1		Web Page URLs for STN Seminar Schedule - N. America
NEWS 2		"Ask CAS" for self-help around the clock
NEWS 3	Feb 24	PCTGEN now available on STN
NEWS 4	Feb 24	TEMA now available on STN
NEWS 5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS 6	Feb 26	PCTFULL now contains images
NEWS 7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
NEWS 8	Mar 24	PATDPAFULL now available on STN
NEWS 9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS 10	Apr 11	Display formats in DGENE enhanced
NEWS 11	Apr 14	MEDLINE Reload
NEWS 12	Apr 17	Polymer searching in REGISTRY enhanced
NEWS 13	AUG 22	Indexing from 1927 to 1936 added to records in CA/CAPLUS
NEWS 14	Apr 21	New current-awareness alert (SDI) frequency in WPIDS/WPINDEX/WPIX
NEWS 15	Apr 28	RDISCLOSURE now available on STN
NEWS 16	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS 17	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS 18	May 15	Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 19	May 19	Simultaneous left and right truncation added to WSCA
NEWS 20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS 21	Jun 06	Simultaneous left and right truncation added to CBNB
NEWS 22	Jun 06	PASCAL enhanced with additional data
NEWS 23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS 24	Jun 25	HSDB has been reloaded
NEWS 25	Jul 16	Data from 1960-1976 added to RDISCLOSURE
NEWS 26	Jul 21	Identification of STN records implemented
NEWS 27	Jul 21	Polymer class term count added to REGISTRY
NEWS 28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS 29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS 30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS 31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS 32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS 35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS 36	AUG 18	Simultaneous left and right truncation added to PASCAL
NEWS 37	AUG 18	FROSTI and KOSMET enhanced with Simultaneous Left and Right Truncation

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 NEWS 38  AUG 18  Simultaneous left and right truncation added to ANABSTR

 NEWS EXPRESS  April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
               MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
               AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
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FILE 'HOME' ENTERED AT 16:54:46 ON 22 AUG 2003

=> file medline, uspatful, dgene, embase,fsta, jicst, wpids
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       0.21       0.21

FILE 'MEDLINE' ENTERED AT 16:55:30 ON 22 AUG 2003

FILE 'USPATFULL' ENTERED AT 16:55:30 ON 22 AUG 2003
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=> s recrystallization
L1        67276 RECRYSTALLIZATION

=> s l1 and inhibition
L2        16063 L1 AND INHIBITION

=>  s thermal hysteresis protein
L3          153 THERMAL HYSTERESIS PROTEIN

=> s l3 and l2
L4            9 L3 AND L2

=> d l4 ti abs ibib tot

L4   ANSWER 1 OF 9  USPATFULL on STN
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TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity

AB Thermal hysteresis proteins and their nucleotide sequences derived from the Tenebrionoidea Superfamily which lower the freezing point of a solution without effecting the melting point. Related methods for preparing said proteins and for providing antifreeze or **recrystallization inhibition** properties to a subject formulation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:307900 USPATFULL		
TITLE:	Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity		
INVENTOR(S):	Horwath, Kathleen L., Endwell, NY, UNITED STATES Easton, Christopher M., Ithaca, NY, UNITED STATES		

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002173024	A1	20021121	
APPLICATION INFO.:	US 2001-876796	A1	20010607	(9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-210446P	20000608 (60)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901
NUMBER OF CLAIMS:	40
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	131 Drawing Page(s)
LINE COUNT:	10082

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 2 OF 9 USPATFULL on STN

TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity

AB A **recrystallization inhibition** method for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising: providing a proteinaceous composition in a solvent to form a test solution; flash freezing said solution; raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within said solution; maintaining said frozen solution at the annealing temperature for a length of time sufficient to allow for **recrystallization**; monitoring the ice crystal grain size changes over time; and determining the presence of functional thermal hysteresis proteins in said solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution.

Applicant

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:307828 USPATFULL		
TITLE:	Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity		
INVENTOR(S):	Horwath, Kathleen L., Endwell, NY, UNITED STATES Meyers, Kevin L., Trumansburg, NY, UNITED STATES		

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002172951	A1	20021121	
APPLICATION INFO.:	US 2001-876348	A1	20010607	(9)

	NUMBER	DATE

PRIORITY INFORMATION:	US 2000-210446P 20000608 (60)
DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901
NUMBER OF CLAIMS:	34
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	131 Drawing Page(s)
LINE COUNT:	10121

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 3 OF 9 USPATFULL on STN

TI Tenebrio antifreeze proteins

AB A novel class of thermal hysteresis (antifreeze) proteins (THP) that have up to 100 times the specific activity of fish antifreeze proteins has been isolated and purified from the mealworm beetle, Tenebrio molitor. Internal sequencing of the proteins, leading to cDNA cloning and production of the protein in bacteria has confirmed the identity and activity of the 8.4 to 10.7 kDa THP. They are novel Thr- and Cys-rich proteins composed largely of 12-amino-acid repeats of cys-thr-xaa-ser-xaa-xaa-cys-xaa-xaa-ala-xaa-thr. At a concentration of 55 .mu.g/mL, the THP depressed the freezing point 1.6.degree. C. below the melting point, and at a concentration of .about.1 mg/mL the THP or its variants can account for the 5.5.degree. C. of thermal hysteresis found in Tenebrio larvae. The THP function by an adsorption-**inhibition** mechanism and produce oval-shaped ice crystals with curved prism faces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:295333 USPATFULL
TITLE:	Tenebrio antifreeze proteins
INVENTOR(S):	Graham, Laurie A., Kingston, CANADA Liou, Yih-Cherng, Kingston, CANADA Walker, Virginia K., Sydenham, CANADA Davies, Peter L., Kingston, CANADA
PATENT ASSIGNEE(S):	Queen's University at Kingston, Kingston, CANADA, K7L 3N6 (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002165383	A1	20021107
APPLICATION INFO.:	US 2002-32658	A1	20020102 (10)

RELATED APPLN. INFO.:	Division of Ser. No. US 1997-882907, filed on 26 Jun 1997, PENDING
DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS:	35
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	7 Drawing Page(s)
LINE COUNT:	2514

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 4 OF 9 USPATFULL on STN

TI Tenebrio antifreeze proteins

AB A novel class of thermal hysteresis (antifreeze) proteins (THP) that have up to 100 times the specific activity of fish antifreeze proteins has been isolated and purified from the mealworm beetle, Tenebrio molitor. Internal sequencing of the proteins, leading to cDNA cloning and production of the protein in bacteria has confirmed the identity and activity of the 8.4 to 10.7 kDa THP. They are novel Thr- and Cys-rich proteins composed largely of 12-amino-acid repeats of

cys-thr-xaa-ser-xaa-xaa-cys-xaa-xaa-ala-xaa-thr. At a concentration of 55 .mu.g/mL, the THP depressed the freezing point 1.6.degree. C. below the melting point, and at a concentration of .about.1 mg/mL the THP or its variants can account for the 5.5.degree. C. of thermal hysteresis found in Tenebrio larvae. The THP function by an adsorption-**inhibition** mechanism and produce oval-shaped ice crystals with curved prism faces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:116393 USPATFULL
TITLE:	Tenebrio antifreeze proteins
INVENTOR(S):	Graham, Laurie A., Kingston, CANADA Liou, Yih-Cherng, Kingston, CANADA Walker, Virginia K., Sydenham, CANADA Davies, Peter L., Kingston, CANADA
PATENT ASSIGNEE(S):	Queen's University at Kingston, Ontario, CANADA (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6392024	B1	20020521
APPLICATION INFO.:	US 1997-882907		19970626 (8)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	GRANTED
PRIMARY EXAMINER:	Achutamurthy, Ponnathapu
ASSISTANT EXAMINER:	Tung, Peter P.
LEGAL REPRESENTATIVE:	Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS:	19
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	6 Drawing Figure(s); 7 Drawing Page(s)
LINE COUNT:	2370

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 5 OF 9 USPATFULL on STN

TI Spruce budworm antifreeze proteins, genes and method of using same

AB A novel class of thermal hysteresis, antifreeze proteins (THPs) has been isolated and purified from Choristoneura sp., including the eastern spruce budworm C. fumiferana. The invention provides for nucleic acids which encode these antifreeze proteins. The invention also provides for antibodies reactive to these novel antifreeze proteins. The invention also includes a method for decreasing the freezing point of an aqueous solution by adding these novel antifreeze proteins to the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:34530 USPATFULL
TITLE:	Spruce budworm antifreeze proteins, genes and method of using same
INVENTOR(S):	Walker, Virginia K., Sydenham, CANADA Davies, Peter L., Kingston, CANADA Rahavard, Mitra, Kingston, CANADA Tyshenko, Michael G., Kingston, CANADA
PATENT ASSIGNEE(S):	Queen's University at Kingston, Kingston, CANADA (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6348569	B1	20020219
APPLICATION INFO.:	US 1999-434323		19991104 (9)
RELATED APPLN. INFO.:	Division of Ser. No. US 1997-868594, filed on 3 Jun 1997, now patented, Pat. No. US 6008016 Continuation-in-part of Ser. No. US 1996-657264, filed on 3 Jun 1996, now abandoned		
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		

PRIMARY EXAMINER: Nashed, Nashaat T.
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 14
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 2218
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 6 OF 9 USPATFULL on STN
TI Spruce budworm antifreeze proteins, genes and methods of using same
AB A novel class of thermal hysteresis, antifreeze proteins (THPs) has been isolated and purified from Choristoneura sp., including the eastern spruce budworm C. fumiferana. The invention provides for nucleic acids which encode these antifreeze proteins. The invention also provides for antibodies reactive to these novel antifreeze proteins. The invention also includes a method for decreasing the freezing point of an aqueous solution by adding these novel antifreeze proteins to the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 1999:170409 USPATFULL
TITLE: Spruce budworm antifreeze proteins, genes and methods of using same
INVENTOR(S): Walker, Virginia K., Sydenham, Canada
Davies, Peter L., Kingston, Canada
Rahavard, Mitra, Kingston, Canada
Tyshenko, Michael G., Kingston, Canada
PATENT ASSIGNEE(S): Queen's University at Kingston, Ontario, Canada (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6008016		19991228
APPLICATION INFO.:	US 1997-868594		19970603 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1996-657264, filed on 3 Jun 1996, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Nashed, Nashaat
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 37
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 2392
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 7 OF 9 USPATFULL on STN
TI Transgenic plants having a nucleic acid sequence encoding a dendroides antifreeze protein
AB The present invention is directed to transgenic plants having nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:45207 USPATFULL
TITLE: Transgenic plants having a nucleic acid sequence encoding a dendroides antifreeze protein
INVENTOR(S): Duman, John G., South Bend, IN, United States
PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5633451		19970527
APPLICATION INFO.:	US 1995-569594		19951208 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1995-485359, filed on 7 Jun 1995
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Fox, David T.
ASSISTANT EXAMINER: Haas, Thomas
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 1
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 966
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 8 OF 9 USPATFULL on STN
TI Nucleic acid sequences encoding dendroides antifreeze proteins
AB The present invention is directed to nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:38394 USPATFULL
TITLE: Nucleic acid sequences encoding dendroides antifreeze proteins
INVENTOR(S): Duman, John G., South Bend, IN, United States
PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5627051		19970506
APPLICATION INFO.:	US 1995-485359		19950607 (8)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Jacobson, Dian C.
ASSISTANT EXAMINER: Lau, Kawai
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 959
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 9 OF 9 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN
TI New cDNA polynucleotide encoding a **thermal hysteresis protein** which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.
AN 2002-090137 [12] WPIDS
AB WO 200194378 A UPAB: 20020221
NOVELTY - A cDNA polynucleotide (I) comprising a nucleotide sequence for encoding a **thermal hysteresis protein** which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) a mRNA polynucleotide (II) comprising a nucleotide sequence for encoding thermal hysteresis proteins derived from the Tenebrionoidea Superfamily transcribed from (I);

(2) a DNA or RNA probe having a sequence complementary or identical to a sequence of contiguous nucleotides for at least a portion of (I);

(3) a recombinant vector containing (I);

(4) a **thermal hysteresis protein**, preferably an endogenous Type III anti-freeze proteins, derived from the Tenebrionoidea Superfamily which lowers the freezing point of a solution without effecting the melting point of the solution;

(5) a consensus sequence with a nucleotide sequence selected from one of the four 481 nucleotide sequences (S1-S4) defined in the specification;

(6) a consensus sequence with an amino acid sequence selected from the 133 (S5), 134 (S6), another 134 (S7), another 134 (S8) amino acid sequence defined in the specification;

(7) a consensus sequence with the 133 amino acid sequence (S9) defined in the specification;

(8) a primer having a nucleotide sequence selected from P1-P3;

(9) a method (M1) for producing a polypeptide having antifreeze properties comprising forming a cloning vector with a Tm 12.86 family member gene encoding an antifreeze polypeptide, transferring genes of the cloning vector into DNA of host cell to create a transformed cell, expressing a mRNA sequence and a translated amino acid sequence from the recombinant expression vector, the sequence being isoforms of the Tm 12.86 T. molitor antifreeze polypeptide;

(10) a method (M2) for providing antifreeze or **recrystallization inhibition** properties to a subject formulation comprising incorporating at least 0.1 micrograms to 1 mg of an activated polypeptide into 1 ml of a subject formulation to obtain **recrystallization inhibition** or 1 mg to 25 mg of the activated polypeptide into 1 ml of a subject formulation to thermal hysteresis;

(11) a Tm 12.86 antibody/antiserum;

(12) a **recrystallization inhibition** method (M3) for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising providing a proteinaceous composition in a solvent to form a test solution, flash freezing the solution, raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within the solution, maintaining the frozen solution at the annealing temperature for a length of time sufficient to allow for **recrystallization**, monitoring the ice crystal grain size changes over time, and determining the presence of functional thermal hysteresis proteins in the solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution;

(13) a method for quantitatively assessing the extent of **recrystallization** occurring in frozen foods, and the impact of solution additives to inhibit or limit **recrystallization** according to the process defined in M3; and

(14) a method for quantitatively assessing and comparing the effectiveness of cryoprotective solutions on the extent of **recrystallization** occurring in cryopreserved cells, tissues, solutions and the like, according to the process defined in M3.

CGCGGATCCCTCACCGACGAACAG (P1);

GAGAGGATAACTAATTGAGCTCGCC (P2); and

CGCGGATCCCTGACCGAGGCACAA (P3).

USE - The activated anti-freeze protein is incorporated into:

(a) plant, produce or fish in an amount sufficient to provide antifreeze protection;

(b) a region of a target tissue in an amount sufficient to provide antifreeze protein controlled limited tumor cell or target tissue cryoinjury during cryosurgery;

(c) hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues by incorporating the protein into the cells, tissue, or cell membranes in a controlled amount sufficient to provide antifreeze

protection;

(d) de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, cosmetic products, machinery and plant surfaces; or

(e) a food product in an amount sufficient to provide antifreeze protection to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage.

The polynucleotides for the activated protein are used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatization. The Tm 12.86 antibody/antiserum is used as a screening device to identify positive recombinant plaques containing cloned inserts capable in an expression vector system to produce recombinant products recognized by the antibody/antiserum. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species.

M3 is used for concurrent multiple sample testing of solutions which includes the 'sandwich' method; and application via a 96 well plate device (all claimed).

Dwg.0/8

ACCESSION NUMBER: 2002-090137 [12] WPIDS
DOC. NO. CPI: C2002-027870
TITLE: New cDNA polynucleotide encoding a **thermal hysteresis protein** which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.
DERWENT CLASS: C06 D16
INVENTOR(S): HORWATH, K L; MEYERS, K L; EASTON, C M; MYERS, K L
PATENT ASSIGNEE(S): (EAST-I) EASTON C M; (HORW-I) HORWATH K L; (MYER-I) MYERS K L; (UYNY) UNIV NEW YORK STATE RES FOUND; (MEYE-I) MEYERS K L
COUNTRY COUNT: 91
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001094378 A1		20011213	(200212)*	EN	231
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
AU 2001075389 A		20011217	(200225)		
US 2002172951 A1		20021121	(200279)		
US 2002173024 A1		20021121	(200279)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001094378 A1		WO 2001-US18532	20010607
AU 2001075389 A		AU 2001-75389	20010607
US 2002172951 A1	Provisional	US 2000-210446P	20000608
		US 2001-876348	20010607
US 2002173024 A1	Provisional	US 2000-210446P	20000608
		US 2001-876796	20010607

FILING DETAILS:

PATENT NO	KIND	PATENT NO

Appl.

AU 2001075389 A Based on WO 200194378

PRIORITY APPLN. INFO: US 2000-210446P 20000608; US 2001-876348
20010607; US 2001-876796 20010607

=> d his

(FILE 'HOME' ENTERED AT 16:54:46 ON 22 AUG 2003)

FILE 'MEDLINE, USPATFULL, DGENE, EMBASE, FSTA, JICST-EPLUS, WPIDS'
ENTERED AT 16:55:30 ON 22 AUG 2003
L1 67276 S RECRYSTALLIZATION
L2 16063 S L1 AND INHIBITION
L3 153 S THERMAL HYSTERESIS PROTEIN
L4 9 S L3 AND L2

=> s l3 and detection
L5 9 L3 AND DETECTION

=> s l4 and l5
L6 8 L4 AND L5

=> d l5 ti abs ibib tot

L5 ANSWER 1 OF 9 USPATFULL on STN
TI Human genes and gene expression products
AB This invention relates to novel human polynucleotides and variants thereof, their encoded polypeptides and variants thereof, to genes corresponding to these polynucleotides and to proteins expressed by the genes. The invention also relates to diagnostic and therapeutic agents employing such novel human polynucleotides, their corresponding genes or gene products, e.g., these genes and proteins, including probes, antisense constructs, and antibodies.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2003:64662 USPATFULL
TITLE: Human genes and gene expression products
INVENTOR(S): Williams, Lewis T., Mill Valley, CA, UNITED STATES
Escobedo, Jaime, Alamo, CA, UNITED STATES
Innis, Michael A., UNITED STATES
Garcia, Pablo Dominguez, San Francisco, CA, UNITED STATES
Sudduth-Klinger, Julie, Kensington, CA, UNITED STATES
Reinhard, Christoph, Alameda, CA, UNITED STATES
Randazzo, Filippo, Oakland, CA, UNITED STATES
Kennedy, Giulia C., San Francisco, CA, UNITED STATES
Pot, David, Arlington, VA, UNITED STATES
Kassam, Altaf, Oakland, CA, UNITED STATES
Lamson, George, Moraga, CA, UNITED STATES
Drmanac, Radjoe, Palo Alto, CA, UNITED STATES
Dickson, Mark, Hollister, CA, UNITED STATES
Labat, Ivan, Mountain View, CA, UNITED STATES
Jones, Lee William, Sunnyvale, CA, UNITED STATES
Stache-Crain, Birgit, Sunnyvale, CA, UNITED STATES

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2003044783	A1	20030306	
APPLICATION INFO.:	US 2001-803719	A1	20010309	(9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-188609P	20000309 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Chiron Corporation Intellectual Property -R440, PO Box 8097, Emeryville, CA, 94662-8097
NUMBER OF CLAIMS: 15
EXEMPLARY CLAIM: 1
LINE COUNT: 23459
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 2 OF 9 USPATFULL on STN
TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
AB Thermal hysteresis proteins and their nucleotide sequences derived from the Tenebrionoidea Superfamily which lower the freezing point of a solution without effecting the melting point. Related methods for preparing said proteins and for providing antifreeze or recrystallization inhibition properties to a subject formulation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2002:307900 USPATFULL
TITLE: Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
INVENTOR(S): Horwath, Kathleen L., Endwell, NY, UNITED STATES
Easton, Christopher M., Ithaca, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002173024	A1	20021121
APPLICATION INFO.:	US 2001-876796	A1	20010607 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-210446P	20000608 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901
NUMBER OF CLAIMS: 40
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 131 Drawing Page(s)
LINE COUNT: 10082
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 3 OF 9 USPATFULL on STN
TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
AB A recrystallization inhibition method for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising: providing a proteinaceous composition in a solvent to form a test solution; flash freezing said solution; raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within said solution; maintaining said frozen solution at the annealing temperature for a length of time sufficient to allow for recrystallization; monitoring the ice crystal grain size changes over time; and determining the presence of functional thermal hysteresis proteins in said solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2002:307828 USPATFULL
TITLE: Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
INVENTOR(S): Horwath, Kathleen L., Endwell, NY, UNITED STATES

Meyers, Kevin L., Trumansburg, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002172951	A1	20021121
APPLICATION INFO.:	US 2001-876348	A1	20010607 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-210446P	20000608 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901
NUMBER OF CLAIMS: 34
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 131 Drawing Page(s)
LINE COUNT: 10121
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 4 OF 9 USPATFULL on STN
TI Tenebrio antifreeze proteins
AB A novel class of thermal hysteresis (antifreeze) proteins (THP) that have up to 100 times the specific activity of fish antifreeze proteins has been isolated and purified from the mealworm beetle, Tenebrio molitor. Internal sequencing of the proteins, leading to cDNA cloning and production of the protein in bacteria has confirmed the identity and activity of the 8.4 to 10.7 kDa THP. They are novel Thr- and Cys-rich proteins composed largely of 12-amino-acid repeats of cys-thr-xaa-ser-xaa-xaa-cys-xaa-xaa-ala-xaa-thr. At a concentration of 55 .mu.g/mL, the THP depressed the freezing point 1.6.degree. C. below the melting point, and at a concentration of .about.1 mg/mL the THP or its variants can account for the 5.5.degree. C. of thermal hysteresis found in Tenebrio larvae. The THP function by an adsorption-inhibition mechanism and produce oval-shaped ice crystals with curved prism faces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2002:295333 USPATFULL
TITLE: Tenebrio antifreeze proteins
INVENTOR(S): Graham, Laurie A., Kingston, CANADA
Liou, Yih-Cherng, Kingston, CANADA
Walker, Virginia K., Sydenham, CANADA
Davies, Peter L., Kingston, CANADA
PATENT ASSIGNEE(S): Queen's University at Kingston, Kingston, CANADA, K7L 3N6 (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002165383	A1	20021107
APPLICATION INFO.:	US 2002-32658	A1	20020102 (10)

RELATED APPLN. INFO.: Division of Ser. No. US 1997-882907, filed on 26 Jun 1997, PENDING
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 35
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Page(s)
LINE COUNT: 2514
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 5 OF 9 USPATFULL on STN
TI Tenebrio antifreeze proteins

AB A novel class of thermal hysteresis (antifreeze) proteins (THP) that have up to 100 times the specific activity of fish antifreeze proteins has been isolated and purified from the mealworm beetle, Tenebrio molitor. Internal sequencing of the proteins, leading to cDNA cloning and production of the protein in bacteria has confirmed the identity and activity of the 8.4 to 10.7 kDa THP. They are novel Thr- and Cys-rich proteins composed largely of 12-amino-acid repeats of cys-thr-xaa-ser-xaa-xaa-cys-xaa-xaa-ala-xaa-thr. At a concentration of 55 .mu.g/mL, the THP depressed the freezing point 1.6.degree. C. below the melting point, and at a concentration of .about.1 mg/mL the THP or its variants can account for the 5.5.degree. C. of thermal hysteresis found in Tenebrio larvae. The THP function by an adsorption-inhibition mechanism and produce oval-shaped ice crystals with curved prism faces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:116393 USPATFULL			
TITLE:	Tenebrio antifreeze proteins			
INVENTOR(S):	Graham, Laurie A., Kingston, CANADA Liou, Yih-Cherng, Kingston, CANADA Walker, Virginia K., Sydenham, CANADA Davies, Peter L., Kingston, CANADA			
PATENT ASSIGNEE(S):	Queen's University at Kingston, Ontario, CANADA (non-U.S. corporation)			
	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6392024	B1	20020521	
APPLICATION INFO.:	US 1997-882907		19970626	(8)
DOCUMENT TYPE:	Utility			
FILE SEGMENT:	GRANTED			
PRIMARY EXAMINER:	Achutamurthy, Ponnathapu			
ASSISTANT EXAMINER:	Tung, Peter P.			
LEGAL REPRESENTATIVE:	Townsend and Townsend and Crew LLP			
NUMBER OF CLAIMS:	19			
EXEMPLARY CLAIM:	1			
NUMBER OF DRAWINGS:	6 Drawing Figure(s); 7 Drawing Page(s)			
LINE COUNT:	2370			

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 6 OF 9 USPATFULL on STN

TI Spruce budworm antifreeze proteins, genes and method of using same

AB A novel class of thermal hysteresis, antifreeze proteins (THPs) has been isolated and purified from Choristoneura sp., including the eastern spruce budworm C. fumiferana. The invention provides for nucleic acids which encode these antifreeze proteins. The invention also provides for antibodies reactive to these novel antifreeze proteins. The invention also includes a method for decreasing the freezing point of an aqueous solution by adding these novel antifreeze proteins to the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:34530 USPATFULL			
TITLE:	Spruce budworm antifreeze proteins, genes and method of using same			
INVENTOR(S):	Walker, Virginia K., Sydenham, CANADA Davies, Peter L., Kingston, CANADA Rahavard, Mitra, Kingston, CANADA Tyshenko, Michael G., Kingston, CANADA			
PATENT ASSIGNEE(S):	Queen's University at Kingston, Kingston, CANADA (non-U.S. corporation)			
	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6348569	B1	20020219	
APPLICATION INFO.:	US 1999-434323		19991104	(9)

RELATED APPLN. INFO.: Division of Ser. No. US 1997-868594, filed on 3 Jun 1997, now patented, Pat. No. US 6008016
Continuation-in-part of Ser. No. US 1996-657264, filed on 3 Jun 1996, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Nashed, Nashaat T.
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 14
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 2218
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 7 OF 9 USPATFULL on STN
TI Spruce budworm antifreeze proteins, genes and methods of using same
AB A novel class of thermal hysteresis, antifreeze proteins (THPs) has been isolated and purified from Choristoneura sp., including the eastern spruce budworm C. fumiferana. The invention provides for nucleic acids which encode these antifreeze proteins. The invention also provides for antibodies reactive to these novel antifreeze proteins. The invention also includes a method for decreasing the freezing point of an aqueous solution by adding these novel antifreeze proteins to the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 1999:170409 USPATFULL
TITLE: Spruce budworm antifreeze proteins, genes and methods of using same
INVENTOR(S): Walker, Virginia K., Sydenham, Canada
Davies, Peter L., Kingston, Canada
Rahavard, Mitra, Kingston, Canada
Tyshenko, Michael G., Kingston, Canada
PATENT ASSIGNEE(S): Queen's University at Kingston, Ontario, Canada (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6008016		19991228
APPLICATION INFO.:	US 1997-868594		19970603 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1996-657264, filed on 3 Jun 1996, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Nashed, Nashaat
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 37
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 2392
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 8 OF 9 USPATFULL on STN
TI Transgenic plants having a nucleic acid sequence encoding a dendroides antifreeze protein
AB The present invention is directed to transgenic plants having nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:45207 USPATFULL
TITLE: Transgenic plants having a nucleic acid sequence

encoding a dendroides antifreeze protein
INVENTOR(S): Duman, John G., South Bend, IN, United States
PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5633451		19970527
APPLICATION INFO.:	US 1995-569594		19951208 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1995-485359, filed on 7 Jun 1995
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Fox, David T.
ASSISTANT EXAMINER: Haas, Thomas
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 1
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 966
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 9 OF 9 USPATFULL on STN
TI Nucleic acid sequences encoding dendroides antifreeze proteins
AB The present invention is directed to nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:38394 USPATFULL
TITLE: Nucleic acid sequences encoding dendroides antifreeze proteins
INVENTOR(S): Duman, John G., South Bend, IN, United States
PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5627051		19970506
APPLICATION INFO.:	US 1995-485359		19950607 (8)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Jacobson, Dian C.
ASSISTANT EXAMINER: Lau, Kawai
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 959
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d his

(FILE 'HOME' ENTERED AT 16:54:46 ON 22 AUG 2003)

FILE 'MEDLINE, USPATFULL, DGENE, EMBASE, FSTA, JICST-EPLUS, WPIDS'
ENTERED AT 16:55:30 ON 22 AUG 2003
L1 67276 S RECRYSTALLIZATION
L2 16063 S L1 AND INHIBITION
L3 153 S THERMAL HYSTERESIS PROTEIN

L4 9 S L3 AND L2
L5 9 S L3 AND DETECTION
L6 8 S L4 AND L5

=> s recrystallization inhibition
L7 46 RECRYSTALLIZATION INHIBITION

=> d l7 ti abs ibib tot

L7 ANSWER 1 OF 46 MEDLINE on STN
TI A serendipitous discovery of antifreeze protein-specific activity in C-linked antifreeze glycoprotein analogs.
AB Structurally diverse carbon-linked (C-linked) analogs of antifreeze glycoprotein (AFGP) have been prepared via linear or convergent solid phase synthesis. These analogs range in molecular weight from approx 1.5-4.1 KDa and do not possess the beta-D-galactose-1,3-alpha-D-N-acetylgalactosamine carbohydrate moiety or the L-threonine-L-alanine-L-alanine polypeptide backbone native to the AFGP wild-type. Despite these dramatic structural modifications, the 2.7-KDa and 4.1-KDa analogs possess antifreeze protein-specific activity as determined by **recrystallization-inhibition** (RI) and thermal hysteresis (TH) assays. These analogs are weaker than the wild-type in their activity, but nanoliter osmometry indicates that these compounds are binding to ice and affecting a localized freezing point depression. This is the first example of a C-linked AFGP analog that possesses TH and RI activity and suggests that the rational design and synthesis of chemically and biologically stable AFGP analogs is a feasible and worthwhile endeavor. Given the low degree of TH activity, these compounds may prove useful for the protection of cells during freezing and thawing cycles.
ACCESSION NUMBER: 2003253825 IN-PROCESS
DOCUMENT NUMBER: 22661945 PubMed ID: 12777711
TITLE: A serendipitous discovery of antifreeze protein-specific activity in C-linked antifreeze glycoprotein analogs.
AUTHOR: Eniade Adewale; Purushotham Madhusudhan; Ben Robert; Wang J; Horwath Kathleen
CORPORATE SOURCE: Department of Chemistry, State University of New York at Binghamton, Binghamton, NY 13902.
SOURCE: CELL BIOCHEMISTRY AND BIOPHYSICS, (2003) 38 (2) 115-24. Journal code: 9701934. ISSN: 1085-9195.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20030603
Last Updated on STN: 20030603

L7 ANSWER 2 OF 46 MEDLINE on STN
TI Ice binding, **recrystallization inhibition**, and cryoprotective properties of ice-active substances associated with Antarctic sea ice diatoms.
AB Extracellular macromolecules associated with Antarctic sea ice diatoms were previously shown to have ice-binding activities. The function of these ice-active substances (IASs) has not been identified. Here we show that two of the IASs have a strong ability to inhibit the recrystallization of ice, possibly signifying a cryoprotectant function. To test this possibility, two species of marine diatom (one Antarctic and one temperate) were subjected to a single freeze-thaw cycle (approximately 20h at -4 or -5 degrees C) in the presence or absence of IAS. Viability, based on a double staining technique, was 15-29% higher in the presence of IAS. Etching of single crystal ice hemispheres grown from dilute IAS solutions indicated that the IASs bind to specific faces of ice and are incorporated into the ice lattice. Together, these results suggest that the IASs acts as a cryoprotectant, probably through some ice-binding mechanism.

ACCESSION NUMBER: 2003168594 IN-PROCESS
DOCUMENT NUMBER: 22572789 PubMed ID: 12686207
TITLE: Ice binding, **recrystallization inhibition** , and cryoprotective properties of ice-active substances associated with Antarctic sea ice diatoms.
AUTHOR: Raymond James A; Knight Charles A
CORPORATE SOURCE: Department of Biological Sciences, University of Nevada, 4505 Maryland Pkwy S., 89154, Las Vegas, NV, USA.
SOURCE: CRYOBIOLOGY, (2003 Apr) 46 (2) 174-81.
Journal code: 0006252. ISSN: 0011-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20030416
Last Updated on STN: 20030416

L7 ANSWER 3 OF 46 MEDLINE on STN
TI The physico-chemical characterization of a boiling stable antifreeze protein from a perennial grass (Lolium perenne).
AB We have characterized a cold-induced, boiling stable antifreeze protein. This highly active ice **recrystallization inhibition** protein shows a much lower thermal hysteresis effect and displays binding behavior that is uncharacteristic of any AFP from fish or insects. Ice-binding studies show it binds to the (1 0 1 0) plane of ice and FTIR studies reveal that it has an unusual type of highly beta-sheeted secondary structure. Ice-binding studies of both glycosylated and nonglycosylated expressed forms indicate that it adsorbs to ice through the protein backbone. These results are discussed in light of the currently proposed mechanisms of AFP action.
ACCESSION NUMBER: 2003063106 MEDLINE
DOCUMENT NUMBER: 22461111 PubMed ID: 12573283
TITLE: The physico-chemical characterization of a boiling stable antifreeze protein from a perennial grass (Lolium perenne).
AUTHOR: Pudney P D A; Buckley S L; Sidebottom C M; Twigg S N; Sevilla M-P; Holt C B; Roper David; Telford J H; McArthur A J; Lillford P J
CORPORATE SOURCE: Unilever Research, Colworth House, Sharnbrook, Bedford MK44 1LQ, UK.. Paul.Pudney@unilever.com
SOURCE: ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS, (2003 Feb 15) 410 (2) 238-45.
Journal code: 0372430. ISSN: 0003-9861.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200303
ENTRY DATE: Entered STN: 20030208
Last Updated on STN: 20030327
Entered Medline: 20030326

L7 ANSWER 4 OF 46 MEDLINE on STN
TI The response of Anisakis larvae to freezing.
AB Anisakis third stage larvae utilize a variety of fish as intermediate hosts. Uncooked fish are rendered safe for human consumption by freezing. Larvae freeze by inoculative freezing from the surrounding medium but can survive freezing at temperatures down to -10 degrees C. This ability may be aided by the production of trehalose, which can act as a cryoprotectant, but does not involve **recrystallization inhibition**. Monitoring of fish freezing in commercial blast freezers and under conditions which simulate those of a domestic freezer, indicate that it can take a long time for all parts of the fish to reach a temperature that will kill the larvae. This, and the moderate freezing tolerance of larvae, emphasizes the need for fish to be frozen at a low

enough temperature and for a sufficient time to ensure that fish are safe for consumption.

ACCESSION NUMBER: 2002735609 MEDLINE
DOCUMENT NUMBER: 22387720 PubMed ID: 12498643
TITLE: The response of Anisakis larvae to freezing.
AUTHOR: Wharton D A; Aalders O
CORPORATE SOURCE: Department of Zoology, University of Otago, PO Box 56, Dunedin, New Zealand.. david.wharton@stonebow.otago.ac.nz
SOURCE: JOURNAL OF HELMINTHOLOGY, (2002 Dec) 76 (4) 363-8. Journal code: 2985115R. ISSN: 0022-149X.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200301
ENTRY DATE: Entered STN: 20021227
Last Updated on STN: 20030124
Entered Medline: 20030123

L7 ANSWER 5 OF 46 MEDLINE on STN
TI Semipurification and ice **recrystallization inhibition** activity of ice-active substances associated with Antarctic photosynthetic organisms.
AB Ice-active substances (IASs), i.e., macromolecular substances that modify the shape of growing ice crystals, were previously found to be associated with various terrestrial and aquatic photosynthetic organisms from Antarctica, but their chemical nature and function are unknown. In this study, we used the ice-binding properties of the IASs to semipurify IASs from a cyanobacterial mat, a eukaryotic green alga (Prasiola sp.), and a moss (Bryum sp.) and examined the ice **recrystallization inhibition** (RI) activities of the semipure materials. The semipure materials contain both protein and carbohydrate in which the carbohydrate accounted for 73, 52, and 37%, respectively, of the total carbohydrate + protein. The IASs had RI activity at concentrations of 1.4, 0.05, and 0.01 microg ml-1, respectively. RI activity was greatly reduced by heat treatment, suggesting that the IASs inhibit recrystallization through a specific interaction with ice. These results raise the possibility that the IASs increase freezing tolerance of their respective organisms by preventing the recrystallization of ice.

ACCESSION NUMBER: 2002135927 MEDLINE
DOCUMENT NUMBER: 21671040 PubMed ID: 11812052
TITLE: Semipurification and ice **recrystallization inhibition** activity of ice-active substances associated with Antarctic photosynthetic organisms.
AUTHOR: Raymond J A; Fritsen C H
CORPORATE SOURCE: Department of Biological Sciences, University of Nevada, Las Vegas, Nevada 89154, USA.. raymond@unlv.edu
SOURCE: CRYOBIOLOGY, (2001 Aug) 43 (1) 63-70. Journal code: 0006252. ISSN: 0011-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200204
ENTRY DATE: Entered STN: 20020302
Last Updated on STN: 20020413
Entered Medline: 20020412

L7 ANSWER 6 OF 46 MEDLINE on STN
TI A theoretical model of a plant antifreeze protein from Lolium perenne.
AB Antifreeze proteins (AFPs), found in certain organisms enduring freezing environments, have the ability to inhibit damaging ice crystal growth. Recently, the repetitive primary sequence of the AFP of perennial

ryegrass, Lolium perenne, was reported. This macromolecular antifreeze has high ice **recrystallization inhibition** activity but relatively low thermal hysteresis activity. We present here a theoretical three-dimensional model of this 118-residue plant protein based on a beta-roll domain with eight loops of 14-15 amino acids. The fold is supported by a conserved valine hydrophobic core and internal asparagine ladders at either end of the roll. Our model, which is the first proposed for a plant AFP, displays two putative, opposite-facing, ice-binding sites with surface complementarity to the prism face of ice. The juxtaposition of the two imperfect ice-binding surfaces suggests an explanation for the protein's inferior thermal hysteresis but superior ice **recrystallization inhibition** activity and activity when compared with fish and insect AFPs.

ACCESSION NUMBER: 2001674827 MEDLINE
DOCUMENT NUMBER: 21577607 PubMed ID: 11721016
TITLE: A theoretical model of a plant antifreeze protein from Lolium perenne.
AUTHOR: Kuiper M J; Davies P L; Walker V K
CORPORATE SOURCE: Department of Biology, Queen's University, Kingston, Ontario K7L 3N6, Canada.
SOURCE: BIOPHYSICAL JOURNAL, (2001 Dec) 81 (6) 3560-5. Journal code: 0370626. ISSN: 0006-3495.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200201
ENTRY DATE: Entered STN: 20011127
Last Updated on STN: 20020125
Entered Medline: 20020122

L7 ANSWER 7 OF 46 MEDLINE on STN
TI Antifreeze and ice nucleator proteins in terrestrial arthropods.
AB Terrestrial arthropods survive subzero temperatures by becoming either freeze tolerant (survive body fluid freezing) or freeze avoiding (prevent body fluid freezing). Protein ice nucleators (PINs), which limit supercooling and induce freezing, and antifreeze proteins (AFPs), which function to prevent freezing, can have roles in both freeze tolerance and avoidance. Many freeze-tolerant insects produce hemolymph PINs, which induce freezing at high subzero temperatures thereby inhibiting lethal intracellular freezing. Some freeze-tolerant species have AFPs that function as cryoprotectants to prevent freeze damage. Although the mechanism of this cryoprotection is not known, it may involve **recrystallization inhibition** and perhaps stabilization of the cell membrane. Freeze-avoiding species must prevent inoculative freezing initiated by external ice across the cuticle and extend supercooling abilities. Some insects remove PINs in the winter to promote supercooling, whereas others have selected against surfaces with ice-nucleating abilities on an evolutionary time scale. However, many freeze-avoiding species do have proteins with ice-nucleating activity, and these proteins must be masked in winter. In the beetle Dendroides canadensis, AFPs in the hemolymph and gut inhibit ice nucleators. Also, hemolymph AFPs and those associated with the layer of epidermal cells under the cuticle inhibit inoculative freezing. Two different insect AFPs have been characterized. One type from the beetles D. canadensis and Tenebrio molitor consists of 12- and 13-mer repeating units with disulfide bridges occurring at least every six residues. The spruce budworm AFP lacks regular repeat units. Both have much higher activities than any known AFPs.

ACCESSION NUMBER: 2001338023 MEDLINE
DOCUMENT NUMBER: 21091785 PubMed ID: 11181959
TITLE: Antifreeze and ice nucleator proteins in terrestrial arthropods.
AUTHOR: Duman J G

CORPORATE SOURCE: Department of Biological Sciences, University of Notre Dame, Notre Dame, Indiana 46556, USA.. duman.1@nd.edu
SOURCE: ANNUAL REVIEW OF PHYSIOLOGY, (2001) 63 327-57. Ref: 145
Journal code: 0370600. ISSN: 0066-4278.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW LITERATURE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200106
ENTRY DATE: Entered STN: 20010618
Last Updated on STN: 20010618
Entered Medline: 20010614

L7 ANSWER 8 OF 46 MEDLINE on STN
TI Stable, high-level expression of a type I antifreeze protein in Escherichia coli.
AB The type I antifreeze proteins are simple amphipathic helical proteins found in abundance in polar fish species, where they act to prevent freezing of internal fluids by a mechanism of noncolligative freezing point depression. Large-scale production of these proteins for research and biotechnological purposes has been hampered by their apparent instability when expressed in heterologous host systems. This has necessitated their production as fusion proteins, in polymeric form, or as proproteins for secretion, with the concomitant necessity for postpurification processing to generate the mature form of the protein. We have successfully expressed a recombinant variant of type I antifreeze protein (rAFP) in Escherichia coli using the inducible T7 polymerase transcription expression system. The rAFP contains five copies of the 11 amino acid ice-binding repeat motif found in all type I antifreeze proteins. The protein accumulates to high levels intracellularly in the form of inclusion bodies, with no apparent degradation by the cellular proteolytic machinery. We have devised a simple and rapid purification protocol for this recombinant type I antifreeze protein which does not require cellular fractionation, purification of the inclusion bodies, or chromatographic steps. This protocol may be of general use for this class of protein. The protein displays all three activities common to these proteins: **recrystallization inhibition**, noncolligative freezing point depression, and modification of the morphology of single ice crystals in solution.
ACCESSION NUMBER: 1999288213 MEDLINE
DOCUMENT NUMBER: 99288213 PubMed ID: 10336860
TITLE: Stable, high-level expression of a type I antifreeze protein in Escherichia coli.
AUTHOR: Solomon R G; Appels R
CORPORATE SOURCE: CSIRO Plant Industry and Quality Wheat CRC Ltd, Canberra, ACT, 2601, Australia.
SOURCE: PROTEIN EXPRESSION AND PURIFICATION, (1999 Jun) 16 (1) 53-62.
Journal code: 9101496. ISSN: 1046-5928.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199907
ENTRY DATE: Entered STN: 19990727
Last Updated on STN: 19990727
Entered Medline: 19990712

L7 ANSWER 9 OF 46 MEDLINE on STN
TI Recrystallization in a freezing tolerant Antarctic nematode, Panagrolaimus davidi, and an alpine weta, Hemideina maori (Orthoptera; Stenopelmatidae).
AB The ability of haemolymph from the freezing tolerant weta, Hemideina

maori, and supernatant from homogenates of the freezing tolerant nematode Panagrolaimus davidi to inhibit the recrystallization of ice was examined using the "splat freezing" technique and annealing on a cryomicroscope stage. There was no **recrystallization inhibition** in weta haemolymph or in insect ringer controls. **Recrystallization inhibition** was present in the nematode supernatant but this was destroyed by heating and was absent in controls. P. davidi survives intracellular freezing and **recrystallization inhibition** may be important for the survival of this stress.

ACCESSION NUMBER: 97130895 MEDLINE
DOCUMENT NUMBER: 97130895 PubMed ID: 8975688
TITLE: Recrystallization in a freezing tolerant Antarctic nematode, Panagrolaimus davidi, and an alpine weta, Hemideina maori (Orthoptera; Stenopelmatidae).
AUTHOR: Ramlov H; Wharton D A; Wilson P W
CORPORATE SOURCE: Roskilde University Center, Institute of Biology and Chemistry, Denmark.
SOURCE: CRYOBIOLOGY, (1996 Dec) 33 (6) 607-13.
Journal code: 0006252. ISSN: 0011-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199701
ENTRY DATE: Entered STN: 19970219
Last Updated on STN: 19970219
Entered Medline: 19970128

L7 ANSWER 10 OF 46 MEDLINE on STN
TI Nonequilibrium antifreeze peptides and the recrystallization of ice.
AB Evidence is presented that the nonequilibrium antifreeze peptide (AFP) from winter flounder has a special ability to inhibit recrystallization in ice only when an appreciable amount of liquid is present, as is the case when the system contains salts and the temperature is not too low. In this circumstance the AFP binds to the ice surface at the ice-solution interfaces in grain boundaries, preventing migration of the solution and effectively immobilizing the boundaries. In the absence of liquid, **recrystallization inhibition** appears to be a common property of many peptides. This is consistent with the view that the special effects of AFPs require a structural fit onto ice, and therefore require the AFP molecules to have the mobility to achieve that fit. Since the concentration of salt required to induce the special **recrystallization inhibition** effects of AFPs is lower (< 10 mM) than that found normally in physiological fluids, AFPs could play a role in the survival of organisms by preventing damage due to recrystallization. The proposition that mobility is needed for AFP molecules to produce their special influence upon ice growth argues against any special effects of AFPs in devitrification.

ACCESSION NUMBER: 95212140 MEDLINE
DOCUMENT NUMBER: 95212140 PubMed ID: 7697996
TITLE: Nonequilibrium antifreeze peptides and the recrystallization of ice.
AUTHOR: Knight C A; Wen D; Laursen R A
CORPORATE SOURCE: National Center for Atmospheric Research, Boulder, Colorado 80307.
SOURCE: CRYOBIOLOGY, (1995 Feb) 32 (1) 23-34.
Journal code: 0006252. ISSN: 0011-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199505
ENTRY DATE: Entered STN: 19950510
Last Updated on STN: 19950510

Entered Medline: 19950503

L7 ANSWER 11 OF 46 MEDLINE on STN
TI Plant thermal hysteresis proteins.
AB Proteins which produce a thermal hysteresis (i.e. lower the freezing point of water below the melting point) are common antifreezes in cold adapted poikilothermic animals, especially fishes from ice-laden seas and terrestrial arthropods. However, these proteins have not been previously identified in plants. 16 species of plants collected from northern Indiana in autumn and winter had low levels of thermal hysteresis activity, but activity was absent in summer. This suggests that thermal hysteresis proteins may be a fairly common winter adaptation in angiosperms. Winter stem fluid from the bittersweet nightshade, Solanum dulcamara L., also showed the **recrystallization inhibition** activity characteristic of the animal thermal hysteresis proteins (THPs), suggesting a possible function for the THPs in this freeze tolerant species. Other potential functions are discussed. Antibodies to an insect THP cross reacted on immunoelectroblots with proteins in S. dulcamara stem fluid, indicating common epitopes in the insect and plant THPs.
ACCESSION NUMBER: 92287951 MEDLINE
DOCUMENT NUMBER: 92287951 PubMed ID: 1599942
TITLE: Plant thermal hysteresis proteins.
AUTHOR: Urrutia M E; Duman J G; Knight C A
CORPORATE SOURCE: Department of Biological Sciences, University of Notre Dame, IN 46556.
SOURCE: BIOCHIMICA ET BIOPHYSICA ACTA, (1992 May 22) 1121 (1-2) 199-206.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199207
ENTRY DATE: Entered STN: 19920724
Last Updated on STN: 19920724
Entered Medline: 19920714

L7 ANSWER 12 OF 46 MEDLINE on STN
TI Expression of antifreeze proteins in transgenic plants.
AB The quality of frozen fruits and vegetables can be compromised by the damaging effects of ice crystal growth within the frozen tissue. Antifreeze proteins in the blood of some polar fishes have been shown to inhibit ice recrystallization at low concentrations. In order to determine whether expression of genes of this type confers improved freezing properties to plant tissue, we have produced transgenic tobacco and tomato plants which express genes encoding antifreeze proteins. The afa3 antifreeze gene was expressed at high steady-state mRNA levels in leaves from transformed plants, but we did not detect inhibition of ice recrystallization in tissue extracts. However, both mRNA and fusion proteins were detectable in transgenic tomato tissue containing a chimeric gene encoding a fusion protein truncated staphylococcal protein A and antifreeze protein. Furthermore, ice **recrystallization inhibition** was detected in this transgenic tissue.
ACCESSION NUMBER: 92032761 MEDLINE
DOCUMENT NUMBER: 92032761 PubMed ID: 1932678
TITLE: Expression of antifreeze proteins in transgenic plants.
AUTHOR: Hightower R; Baden C; Penzes E; Lund P; Dunsmuir P
CORPORATE SOURCE: DNA Plant Technology Corporation, Oakland, CA 94608.
SOURCE: PLANT MOLECULAR BIOLOGY, (1991 Nov) 17 (5) 1013-21.
Journal code: 9106343. ISSN: 0167-4412.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199111
ENTRY DATE: Entered STN: 19920124
Last Updated on STN: 19920124
Entered Medline: 19911125

L7 ANSWER 13 OF 46 MEDLINE on STN
TI Solute effects on ice recrystallization: an assessment technique.
AB Reliable assessment of the effect of a solute upon ice recrystallization is accomplished with "splat cooling," the impaction of a small solution droplet onto a very cold metal plate. The ice disc has extremely small crystals, and recrystallization can be followed without confusing effects caused by grain nucleation. This method confirms the exceptionally strong **recrystallization inhibition** effect of antifreeze protein from Antarctic fish and shows that grain growth rate is a sensitive function of both grain size and solute concentration.
ACCESSION NUMBER: 88166054 MEDLINE
DOCUMENT NUMBER: 88166054 PubMed ID: 3349811
TITLE: Solute effects on ice recrystallization: an assessment technique.
AUTHOR: Knight C A; Hallett J; DeVries A L
CORPORATE SOURCE: National Center for Atmospheric Research, Boulder, Colorado 80307.
SOURCE: CRYOBIOLOGY, (1988 Feb) 25 (1) 55-60.
Journal code: 0006252. ISSN: 0011-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198804
ENTRY DATE: Entered STN: 19900308
Last Updated on STN: 19900308
Entered Medline: 19880428

L7 ANSWER 14 OF 46 USPATFULL on STN
TI Aluminum alloy excellent in cutting ability, aluminum alloy materials and manufacturing method thereof
AB A first aluminum alloy of the present invention comprises Mg: 0.3-6 mass %, Si: 0.3-10 mass %, Zn: 0.05-1 mass %, Sr: 0.001-0.3 mass % and the balance being Al and impurities. A second aluminum alloy further contains one or more selective additional elements selected from the group consisting of Cu, Fe, Mn, Cr, Zr, Ti, Na and Ca. Furthermore, a third aluminum alloy comprises Mg: 0.1-6 mass %, Si: 0.3-12.5 mass %, Cu: 0.01 mass % or more but less than 1 mass %, Zn: 0.01-3 mass %, Sr: 0.001-0.5 mass % and the balance being Al and impurities. Furthermore, a fourth aluminum alloy further includes one or more optional additional elements selected from the group consisting of Ti, B, C, Fe, Cr, Mn, Zr, V, Sc, Ni, Na, Sb, Ca, Sn, Bi and In.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2003:206746 USPATFULL
TITLE: Aluminum alloy excellent in cutting ability, aluminum alloy materials and manufacturing method thereof
INVENTOR(S): Matsuoka, Hideaki, Oyama, JAPAN
Yamanaka, Masaki, Oyama, JAPAN
Yoshioka, Hiroki, Oyama, JAPAN
Okamoto, Yasuo, Kitakata, JAPAN
Kitamura, Masakatsu, Kitakata, JAPAN
PATENT ASSIGNEE(S): SHOWA DENKO K.K., Tokyo, JAPAN (non-U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2003143102	A1	20030731	
APPLICATION INFO.:	US 2002-202669	A1	20020725	(10)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-224661	20010725
	JP 2002-148340	20020522
	US 2001-311363P	20010813 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., 1940 DUKE STREET, ALEXANDRIA, VA, 22314
NUMBER OF CLAIMS: 119
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Page(s)
LINE COUNT: 3143
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 15 OF 46 USPATFULL on STN
TI COLD TOLERANCES IN PLANTS
AB A plurality of polypeptides derived from intercellular spaces of plant cells having frost tolerance. Some of the polypeptides are ice nucleators for developing ice crystals in extracellular spaces of plant tissue, some of the polypeptides are antifreeze components which control ice crystal growth in extracellular spaces and some of the polypeptides are enzymes which adapt plant cell walls to function differently during formation of ice crystals in plant intercellular spaces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2003:30424 USPATFULL
TITLE: COLD TOLERANCES IN PLANTS
INVENTOR(S): GRIFFITH, MARILYN, WATERLOO, ONTARIO, CANADA

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003022371	A1	20030130
APPLICATION INFO.:	US 1999-362179	A1	19990727 (9)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1995-485647, filed on 7 Jun 1995, PATENTED Division of Ser. No. US 1995-419061, filed on 10 Apr 1995, PATENTED Continuation of Ser. No. US 1993-60425, filed on 11 May 1993, ABANDONED Continuation-in-part of Ser. No. WO 1992-CA255, filed on 12 Jun 1992, UNKNOWN

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1991-12774	19910613
	GB 1991-26485	19911213

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SAMUEL G LAYTON JR, BELL SELTZER PARK & GIBSON, POST OFFICE DRAWER 34009, CHARLOTTE, NC, 28234
NUMBER OF CLAIMS: 23
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Page(s)
LINE COUNT: 1580
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 16 OF 46 USPATFULL on STN
TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
AB Thermal hysteresis proteins and their nucleotide sequences derived from the Tenebrionoidea Superfamily which lower the freezing point of a solution without effecting the melting point. Related methods for preparing said proteins and for providing antifreeze or **recrystallization inhibition** properties to a subject

formulation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:307900 USPATFULL			
TITLE:	Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity			
INVENTOR(S):	Horwath, Kathleen L., Endwell, NY, UNITED STATES Easton, Christopher M., Ithaca, NY, UNITED STATES			
	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002173024	A1	20021121	
APPLICATION INFO.:	US 2001-876796	A1	20010607	(9)
	NUMBER		DATE	
PRIORITY INFORMATION:	US 2000-210446P		20000608	(60)
DOCUMENT TYPE:	Utility			
FILE SEGMENT:	APPLICATION			
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901			
NUMBER OF CLAIMS:	40			
EXEMPLARY CLAIM:	1			
NUMBER OF DRAWINGS:	131 Drawing Page(s)			
LINE COUNT:	10082			

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 17 OF 46 USPATFULL on STN

TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity

AB A **recrystallization inhibition** method for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising: providing a proteinaceous composition in a solvent to form a test solution; flash freezing said solution; raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within said solution; maintaining said frozen solution at the annealing temperature for a length of time sufficient to allow for recrystallization; monitoring the ice crystal grain size changes over time; and determining the presence of functional thermal hysteresis proteins in said solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	2002:307828 USPATFULL			
TITLE:	Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity			
INVENTOR(S):	Horwath, Kathleen L., Endwell, NY, UNITED STATES Meyers, Kevin L., Trumansburg, NY, UNITED STATES			
	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002172951	A1	20021121	
APPLICATION INFO.:	US 2001-876348	A1	20010607	(9)
	NUMBER		DATE	
PRIORITY INFORMATION:	US 2000-210446P		20000608	(60)
DOCUMENT TYPE:	Utility			
FILE SEGMENT:	APPLICATION			
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901			
NUMBER OF CLAIMS:	34			

EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 131 Drawing Page(s)
LINE COUNT: 10121
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 18 OF 46 USPATFULL on STN
TI Hot rolled steel plate to be processed having hyper fine particles, method of manufacturing the same, and method of manufacturing cold rolled steel plate
AB A hot rolled steel sheet with improved formability and producing method therefor, which can be easily produced with general hot strip mills, having less anisotropy of mechanical properties and final ferrite grain diameter of less than 2 .mu.m that could not be achieved by the prior art. The hot rolled steel sheet comprises a ferrite phase as a primary phase, and has an average ferrite grain diameter of less than 2 .mu.m, with the ferrite grains having an aspect ratio of less than 1.5. The hot rolled steel sheet is obtained by carried out a reduction process under a dynamic recrystallization conditions through reduction passes of not less than 5 stands in the hot finish rolling.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2001:59205 USPATFULL
TITLE: Hot rolled steel plate to be processed having hyper fine particles, method of manufacturing the same, and method of manufacturing cold rolled steel plate
INVENTOR(S): Yasuhara, Eiko, Chiba, Japan
Morita, Masahiko, Kurashiki, Japan
Furukimi, Osamu, Chiba, Japan
Okada, Susumu, Tokyo, Japan
PATENT ASSIGNEE(S): Kawasaki Steel Corporation, Kobe, Japan (non-U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6221179	B1	20010424	
	WO 9913123		19990318	
APPLICATION INFO.:	US 1999-297818		19990622	(9)
	WO 1998-JP4078		19980910	
			19990622	PCT 371 date
			19990622	PCT 102(e) date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1997-1246779	19970911

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Yee, Deborah
LEGAL REPRESENTATIVE: Oliff & Berridge, PLC
NUMBER OF CLAIMS: 30
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 1139
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 19 OF 46 USPATFULL on STN
TI Frozen food product
AB Plant anti freeze proteins can advantageously be incorporated into frozen confectionery products, provided they have the capability of limiting the growth of ice crystals

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2000:98549 USPATFULL
TITLE: Frozen food product
INVENTOR(S): Byass, Louise Jane, Heslington, United Kingdom

Darling, Donald Frank, Colworth, United Kingdom
Doucet, Charlotte Juliette, Heslington, United Kingdom
Fenn, Richard Anthony, Colworth, United Kingdom
Lillford, Peter John, Colworth, United Kingdom
McArthur, Andrew John, Colworth, United Kingdom
Needham, David, Colworth, United Kingdom
Sidebottom, Christopher, Colworth, United Kingdom
Smallwood, Keith, Colworth, United Kingdom
Smallwood, Margaret Felicia, Heslington, United Kingdom

PATENT ASSIGNEE(S): Good Humor-Breyers Ice Cream, Division of Conopco, Inc., Green Bay, WI, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6096867		20000801
APPLICATION INFO.:	US 1997-898351		19970722 (8)

	NUMBER	DATE
PRIORITY INFORMATION:	EP 1996-305499	19960706
	EP 1996-305497	19960716
	EP 1996-308362	19961119
	EP 1997-301719	19970314
	EP 1997-301733	19970314

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Davenport, Avis M.
LEGAL REPRESENTATIVE: Farrell, James J.
NUMBER OF CLAIMS: 9
EXEMPLARY CLAIM: 1
LINE COUNT: 923
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 20 OF 46 USPATFULL on STN
TI Cold tolerances in plants
AB A plurality of polypeptides derived from intercellular spaces of plant cells having frost tolerance. Some of the polypeptides are ice nucleators for developing ice crystals in extracellular spaces of plant tissue, some of the polypeptides are antifreeze components which control ice crystal growth in extracellular spaces and some of the polypeptides are enzymes which adapt plant cell walls to function differently during formation of ice crystals in plant intercellular spaces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 1999:132568 USPATFULL
TITLE: Cold tolerances in plants
INVENTOR(S): Griffith, Marilyn, Waterloo, Canada
PATENT ASSIGNEE(S): University of Waterloo, Ontario, Canada (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5972679		19991026
APPLICATION INFO.:	US 1995-485647		19950607 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1995-419061, filed on 10 Apr 1995, now patented, Pat. No. US 5852172 which is a continuation of Ser. No. US 1993-60425, filed on 11 May 1993, now abandoned which is a continuation-in-part of Ser. No. WO 1992-CA255, filed on 12 Jun 1992

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1991-12774	19910613
	GB 1991-26485	19911213

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Weber, Jon P.
LEGAL REPRESENTATIVE: Alston & Bird LLP
NUMBER OF CLAIMS: 35
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 27 Drawing Figure(s); 11 Drawing Page(s)
LINE COUNT: 1673
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 21 OF 46 USPATFULL on STN
TI Cold tolerances in plants
AB A plurality of polypeptides derived from intercellular spaces of plant cells having frost tolerance. Some of the polypeptides are ice nucleators for developing ice crystals in extracellular spaces of plant tissue, some of the polypeptides are antifreeze components which control ice crystal growth in extracellular spaces and some of the polypeptides are enzymes which adapt plant cell walls to function differently during formation of ice crystals in plant intercellular spaces.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 1998:160102 USPATFULL
TITLE: Cold tolerances in plants
INVENTOR(S): Griffith, Marilyn, Waterloo, Canada
PATENT ASSIGNEE(S): University of Waterloo, Ontario, Canada (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5852172		19981222
APPLICATION INFO.:	US 1995-419061		19950410 (8)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1993-60425, filed on 11 May 1993, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1991-12774	19910613
	GB 1991-26485	19911213

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Weber, Jon P.
LEGAL REPRESENTATIVE: Bell Seltzer Intellectual Property Law Group of Alston & Bird LLP
NUMBER OF CLAIMS: 6
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 30 Drawing Figure(s); 12 Drawing Page(s)
LINE COUNT: 1529
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 22 OF 46 USPATFULL on STN
TI Transgenic plants having a nucleic acid sequence encoding a dendroides antifreeze protein
AB The present invention is directed to transgenic plants having nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:45207 USPATFULL
TITLE: Transgenic plants having a nucleic acid sequence encoding a dendroides antifreeze protein
INVENTOR(S): Duman, John G., South Bend, IN, United States

PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5633451		19970527
APPLICATION INFO.:	US 1995-569594		19951208 (8)

RELATED APPLN. INFO.: Division of Ser. No. US 1995-485359, filed on 7 Jun 1995
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Fox, David T.
ASSISTANT EXAMINER: Haas, Thomas
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 1
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 966
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 23 OF 46 USPATFULL on STN
TI Nucleic acid sequences encoding dendroides antifreeze proteins
AB The present invention is directed to nucleic acid sequences encoding Dendroides canadensis thermal hysteresis proteins. The THPs of Dendroides have significantly greater thermal hysteresis activity than any other known anti-freeze protein. The thermal hysteresis activity of the purified THPs can be further enhanced by combining the THPs with various "activating" compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 97:38394 USPATFULL
TITLE: Nucleic acid sequences encoding dendroides antifreeze proteins
INVENTOR(S): Duman, John G., South Bend, IN, United States
PATENT ASSIGNEE(S): University of Notre Dame du Lac, Notre Dame, IN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5627051		19970506
APPLICATION INFO.:	US 1995-485359		19950607 (8)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Jacobson, Dian C.
ASSISTANT EXAMINER: Lau, Kawai
LEGAL REPRESENTATIVE: Barnes & Thornburg
NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 9 Drawing Figure(s); 5 Drawing Page(s)
LINE COUNT: 959
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 24 OF 46 USPATFULL on STN
TI Process for the production of prestressed steels and its named product
AB In a process for producing high-strength, corrosion-resistant and brittle fracture-resistant prestressing steels, there is a fine grain and/or solid solution and/or particle or precipitation hardening, linked with a thermodynamic treatment and subsequent strain hardening. As strengthening measures are used both a solid solution, fine grain and particle or precipitation hardening with a substantially additive effect. The thermomechanical treatment is performed by a controlled rolling of microalloyed, fine grain-melted steels, whilst excluding martensite formation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	94:92958 USPATFULL
TITLE:	Process for the production of prestressed steels and its named product
INVENTOR(S):	Tischhauser, Max W., Weinmanngasse 26, Kuesnacht, Switzerland

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5358578		19941025
APPLICATION INFO.:	US 1993-4486		19930112 (8)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1991-809228, filed on 17 Dec 1991, now abandoned which is a continuation of Ser. No. US 1991-674413, filed on 22 Mar 1991, now abandoned which is a continuation of Ser. No. US 1988-236693, filed on 25 Aug 1988, now abandoned which is a continuation-in-part of Ser. No. US 1986-887174, filed on 30 Jun 1986, now abandoned

	NUMBER	DATE
PRIORITY INFORMATION:	CH 1984-5210843	19841030
	DE 1985-3535886	19851008

DOCUMENT TYPE:	Utility
FILE SEGMENT:	Granted
PRIMARY EXAMINER:	Yee, Deborah
LEGAL REPRESENTATIVE:	Young & Thompson
NUMBER OF CLAIMS:	22
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	2 Drawing Figure(s); 2 Drawing Page(s)
LINE COUNT:	1310

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 25 OF 46 USPATFULL on STN

TI Ice crystal growth suppression polypeptides and method of making

AB Novel methods of improving freezing tolerance of organic materials through the use of antifreeze polypeptides is provided. These polypeptides increase the storage life of foodstuffs and biologics, as well as protect plant products, such as during growth. The antifreeze polypeptides, or their fusion proteins, may be produced chemically or by recombinant DNA techniques, and then purified for a variety of uses.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER:	92:44933 USPATFULL
TITLE:	Ice crystal growth suppression polypeptides and method of making
INVENTOR(S):	Warren, Gareth J., San Francisco, CA, United States Mueller, Gunhild M., San Francisco, CA, United States McKown, Robert L., Albany, CA, United States
PATENT ASSIGNEE(S):	DNA Plant Technology Corporation, Oakland, CA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5118792		19920602
APPLICATION INFO.:	US 1989-350481		19890510 (7)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	Granted
PRIMARY EXAMINER:	Robinson, Douglas W.
ASSISTANT EXAMINER:	Weber, Jon P.
LEGAL REPRESENTATIVE:	Townsend and Townsend
NUMBER OF CLAIMS:	7
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	30 Drawing Figure(s); 29 Drawing Page(s)

LINE COUNT: 1850
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 26 OF 46 USPATFULL on STN
TI Method for producing alloyed tungsten rods
AB In a method for producing tungsten-alloyed rods, a particular tungsten electrodes for tungsten inert gas welding, tungsten plasma welding, tungsten plasma fusion cutting and the like, in which pulverulent tungsten with an admixed oxide additive is compacted, sintered, mechanically worked and submitted to a recrystallization treatment, to achieve a hitherto unobtained high lanthanum integration the pulverulent tungsten is alloyed with a highly pure relaxed lanthanum oxide additive of about 1.8 to 2.2% by weight with respect to the total weight the compacting is carried out with a multiphase pressure buildup and the sintering is carried out with a multiphase temperature buildup.

ACCESSION NUMBER: 90:36086 USPATFULL
TITLE: Method for producing alloyed tungsten rods
INVENTOR(S): Litty, Richard, Sondermoning, Germany, Federal Republic of
PATENT ASSIGNEE(S): Gesellschaft fur Wolfram-Industrie mbH, Traunstein, Germany, Federal Republic of (non-U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 4923673		19900508	
APPLICATION INFO.:	US 1989-399620		19890828	(7)

	NUMBER	DATE
PRIORITY INFORMATION:	DE 1988-3835328	19881017

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Lechert, Jr., Stephen J.
LEGAL REPRESENTATIVE: Spensley, Horn, Jubas & Lubitz
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 10 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 367

L7 ANSWER 27 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI Ice binding, **recrystallization inhibition**, and cryoprotective properties of ice-active substances associated with Antarctic sea ice diatoms.
AB Extracellular macromolecules associated with Antarctic sea ice diatoms were previously shown to have ice-binding activities. The function of these ice-active substances (IASs) has not been identified. Here we show that two of the IASs have a strong ability to inhibit the recrystallization of ice, possibly signifying a cryoprotectant function. To test this possibility, two species of marine diatom (one Antarctic and one temperate) were subjected to a single freeze-thaw cycle (approximately 20h at -4 or -5.degree.C) in the presence or absence of IAS. Viability, based on a double staining technique, was 15-29% higher in the presence of IAS. Etching of single crystal ice hemispheres grown from dilute IAS solutions indicated that the IASs bind to specific faces of ice and are incorporated into the ice lattice. Together, these results suggest that the IASs acts as a cryoprotectant, probably through some ice-binding mechanism.
ACCESSION NUMBER: 2003145161 EMBASE
TITLE: Ice binding, **recrystallization inhibition**, and cryoprotective properties of ice-active substances associated with Antarctic sea ice diatoms.
AUTHOR: Raymond J.A.; Knight C.A.
CORPORATE SOURCE: J.A. Raymond, Department of Biological Sciences, University

of Nevada, 4505 Maryland Pkwy S., Las Vegas, NV 89154, United States. raymond@unlv.edu
SOURCE: Cryobiology, (2003) 46/2 (174-181).
Refs: 23
ISSN: 0011-2240 CODEN: CRYBAS
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 28 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI The physico-chemical characterization of a boiling stable antifreeze protein from a perennial grass (Lolium perenne).
AB We have characterized a cold-induced, boiling stable antifreeze protein. This highly active ice **recrystallization inhibition** protein shows a much lower thermal hysteresis effect and displays binding behavior that is uncharacteristic of any AFP from fish or insects. Ice-binding studies show it binds to the (1010) plane of ice and FTIR studies reveal that it has an unusual type of highly .beta.-sheeted secondary structure. Ice-binding studies of both glycosylated and nonglycosylated expressed forms indicate that it adsorbs to ice through the protein backbone. These results are discussed in light of the currently proposed mechanisms of AFP action. .COPYRGT. 2002 Elsevier Science (USA). All rights reserved.
ACCESSION NUMBER: 2003094589 EMBASE
TITLE: The physico-chemical characterization of a boiling stable antifreeze protein from a perennial grass (Lolium perenne).
AUTHOR: Pudney P.D.A.; Buckley S.L.; Sidebottom C.M.; Twigg S.N.; Sevilla M.-P.; Holt C.B.; Roper D.; Telford J.H.; McArthur A.J.; Lillford P.J.
CORPORATE SOURCE: P.D.A. Pudney, Unilever Research, Colworth House, Sharnbrook, Bedford MK44 1LQ, United Kingdom. Paul.Pudney@unilever.com
SOURCE: Archives of Biochemistry and Biophysics, (15 Feb 2003) 410/2 (238-245).
Refs: 34
ISSN: 0003-9861 CODEN: ABBIA4
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 29 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI The response of Anisakis larvae to freezing.
AB Anisakis third stage larvae utilize a variety of fish as intermediate hosts. Uncooked fish are rendered safe for human consumption by freezing. Larvae freeze by inoculative freezing from the surrounding medium but can survive freezing at temperatures down to - 10.degree.C. This ability may be aided by the production of trehalose, which can act as a cryoprotectant, but does not involve **recrystallization inhibition**. Monitoring of fish freezing in commercial blast freezers and under conditions which simulate those of a domestic freezer, indicate that it can take a long time for all parts of the fish to reach a temperature that will kill the larvae. This, and the moderate freezing tolerance of larvae, emphasizes the need for fish to be frozen at a low enough temperature and for a sufficient time to ensure that fish are safe for consumption.
ACCESSION NUMBER: 2002450809 EMBASE
TITLE: The response of Anisakis larvae to freezing.
AUTHOR: Wharton D.A.; Aalders O.
CORPORATE SOURCE: D.A. Wharton, Department of Zoology, University of Otago, PO Box 56, Dunedin, New Zealand.

david.wharton@stonebow.otago.ac.nz
SOURCE: Journal of Helminthology, (2002) 76/4 (363-368).
Refs: 25
ISSN: 0022-149X CODEN: JOHLAT
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 30 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI Semipurification and ice **recrystallization inhibition** activity of ice-active substances associated with antarctic photosynthetic organisms.
AB Ice-active substances (IASs), i.e., macromolecular substances that modify the shape of growing ice crystals, were previously found to be associated with various terrestrial and aquatic photosynthetic organisms from Antarctica, but their chemical nature and function are unknown. In this study, we used the ice-binding properties of the IASs to semipurify IASs from a cyanobacterial mat, a eukaryotic green alga (Prasiola sp.), and a moss (Bryum sp.) and examined the ice **recrystallization inhibition** (RI) activities of the semipure materials. The semipure materials contain both protein and carbohydrate in which the carbohydrate accounted for 73, 52, and 37%, respectively, of the total carbohydrate + protein. The IASs had RI activity at concentrations of 1.4, 0.05, and 0.01 .mu.g ml(-1), respectively. RI activity was greatly reduced by heat treatment, suggesting that the IASs inhibit recrystallization through a specific interaction with ice. These results raise the possibility that the IASs increase freezing tolerance of their respective organisms by preventing the recrystallization of ice. .COPYRGT. 2001 Elsevier Science.
ACCESSION NUMBER: 2002061328 EMBASE
TITLE: Semipurification and ice **recrystallization inhibition** activity of ice-active substances associated with antarctic photosynthetic organisms.
AUTHOR: Raymond J.A.; Fritsen C.H.
CORPORATE SOURCE: J.A. Raymond, Department of Biological Sciences, University of Nevada, Las Vegas, NV 89154, United States. raymond@unlv.edu
SOURCE: Cryobiology, (2002) 43/1 (63-70).
Refs: 20
ISSN: 0011-2240 CODEN: CRYBAS
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 31 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI A theoretical model of a plant antifreeze protein from Lolium perenne.
AB Antifreeze proteins (AFPs), found in certain organisms enduring freezing environments, have the ability to inhibit damaging ice crystal growth. Recently, the repetitive primary sequence of the AFP of perennial ryegrass, Lolium perenne, was reported. This macromolecular antifreeze has high ice **recrystallization inhibition** activity but relatively low thermal hysteresis activity. We present here a theoretical three-dimensional model of this 118-residue plant protein based on a .BETA.-roll domain with eight loops of 14-15 amino acids. The fold is supported by a conserved valine hydrophobic core and internal asparagine ladders at either end of the roll. Our model, which is the first proposed for a plant AFP, displays two putative, opposite-facing, ice-binding sites with surface complementarity to the prism face of ice. The juxtaposition of the two imperfect ice-binding surfaces suggests an explanation for the protein's inferior thermal hysteresis but superior ice **recrystallization inhibition** activity and activity when

compared with fish and insect AFPs.

ACCESSION NUMBER: 2001423903 EMBASE
TITLE: A theoretical model of a plant antifreeze protein from Lolium perenne.
AUTHOR: Kuiper M.J.; Davies P.L.; Walker V.K.
CORPORATE SOURCE: Dr. V.K. Walker, Queen's Universuty, Department of Biology, Kingston, Ont. K7L 3N6, Canada. walkervk@biology.queensu.ca
SOURCE: Biophysical Journal, (2001) 81/6 (3560-3565).
Refs: 36
ISSN: 0006-3495 CODEN: BIOJAU
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 32 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI Antifreeze and ice nucleator proteins in terrestrial arthropods.
AB Terrestrial arthropods survive subzero temperatures by becoming either freeze tolerant (survive body fluid freezing) or freeze avoiding (prevent body fluid freezing). Protein ice nucleators (PINs), which limit supercooling and induce freezing, and antifreeze proteins (AFPs), which function to prevent freezing, can have roles; in both freeze tolerance and avoidance. Many freeze-tolerant insects produce hemolymph PINs, which induce freezing at high subzero temperatures thereby inhibiting lethal intracellular freezing. Some freeze-tolerant species have AFPs that function as cryoprotectants to prevent freeze damage. Although the mechanism of this cryoprotection is not known, it may involve **recrystallization inhibition** and perhaps stabilization of the cell membrane. Freeze-avoiding species must prevent inoculative freezing initiated by external ice across the cuticle and extend supercooling abilities. Some insects remove PINs in the winter to promote supercooling, whereas others have selected against surfaces with ice-nucleating abilities on an evolutionary time scale. However, many freeze-avoiding species do have proteins with ice-nucleating activity, and these proteins must be masked in winter. In the beetle Dendroides canadensis, AFPs in the hemolymph and gut inhibit ice nucleators. Also, hemolymph AFPs and those associated with the layer of epidermal cells under the cuticle inhibit inoculative freezing. Two different insect AFPs have been characterized. One type from the beetles D. canadensis and Tenebrio molitor consists of 12- and 13-mer repeating units with disulfide bridges occurring at least every six residues. The spruce budworm AFP lacks regular repeat units. Both have much higher activities than any known AFPs.

ACCESSION NUMBER: 2001145305 EMBASE
TITLE: Antifreeze and ice nucleator proteins in terrestrial arthropods.
AUTHOR: Duman J.G.
CORPORATE SOURCE: J.G. Duman, Department of Biological Sciences, University of Notre Dame, Notre Dame, IN 46556, United States. duman.1@nd.edu
SOURCE: Annual Review of Physiology, (2001) 63/- (327-357).
Refs: 150
ISSN: 0066-4278 CODEN: ARPHAD
COUNTRY: United States
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 002 Physiology
022 Human Genetics
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 33 OF 46 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
TI Plant thermal hysteresis proteins.
AB Proteins which produce a thermal hysteresis (i.e. lower the freezing point

of water below the melting point) are common antifreezes in cold adapted poikilothermic animals, especially fishes from ice-laden seas and terrestrial arthropods. However, these proteins have not been previously identified in plants. 16 species of plants collected from northern Indiana in autumn and winter had low levels of thermal hysteresis activity, but activity was absent in summer. This suggests that thermal hysteresis proteins may be a fairly common winter adaptation in angiosperms. Winter stem fluid from the bittersweet nightshade, Solanum dulcamara L., also showed the **recrystallization inhibition** activity characteristic of the animal thermal hysteresis proteins (THPs), suggesting a possible function for the THPs in this freeze tolerant species. Other potential functions are discussed. Antibodies to an insect THP cross reacted on immunoelectroblots with proteins in S. dulcamara stem fluid, indicating common epitopes in the insect and plant THPs.

ACCESSION NUMBER: 92174731 EMBASE
DOCUMENT NUMBER: 1992174731
TITLE: Plant thermal hysteresis proteins.
AUTHOR: Urrutia M.E.; Duman J.G.; Knight C.A.
CORPORATE SOURCE: Department of Biological Sciences, University of Notre Dame,Notre Dame, IN 46556, United States
SOURCE: Biochimica et Biophysica Acta - Protein Structure and Molecular Enzymology, (1992) 1121/1-2 (199-206). ISSN: 0167-4838 CODEN: BBAEDZ
COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

L7 ANSWER 34 OF 46 FSTA COPYRIGHT 2003 IFIS on STN
TI Anti-freeze proteins: prospects and perspectives in food sector.
AN 2000(05):G0206 FSTA
AB Glycopeptides (anti-freeze proteins; AFP) as colloidal solutes and their ability to depress f.p. in polar fish tissues are discussed with reference to: sources of AFP; AFP from marine sources; invertebrate producing AFP (not glycoproteins); AFP from microorganisms; distribution of AFP in cells; properties and types of AFP (types I, II and III AFP; anti-freeze glycoproteins (AFGP)); AFGP; type I AFP (alanine rich; approx. 85% .alpha.-helical structure at low temp.; mol. wt. 3.3-4.5 kDa); type II AFP (high cystein content; aromatic residues in asymetric environment; mol. wt. 1.4-2.4 kDa); type III AFP (no imbalance towards a particular amino acid; highly conserved hydrophilic residues; defined secondary and tertiary structures; mol. wt. 6.5-7.0 kDa); properties of AFP (direct interaction with ice crystals); **recrystallization inhibition**; thermal hysteriasis; interaction with ice nucleators; anti-freeze action; binding of water; adsorption; inhibition; potential use in frozen foods; inhibition of recrystallization; prevention of cellular damage; reduction of microbial growth; AFP in food; and genetic engineering of AFP.

TITLE: Anti-freeze proteins: prospects and perspectives in food sector.
AUTHOR: Mishra, V.; Pattnaik, P.
CORPORATE SOURCE: Dairy Microbiol. Div., Nat. Dairy Res. Inst., Karnal 132 001, Haryana, India
SOURCE: Indian Food Industry, (1999) 18 (4) 238-244, 27 ref.
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 35 OF 46 FSTA COPYRIGHT 2003 IFIS on STN
TI Recrystallization in model ice cream solutions as affected by stabilizer concentration.
AN 1998(06):P1069 FSTA
AB Ice recrystallization rate in [model ice cream solutions consisting of] simple aqueous solutions comprising fructose and a hydrocolloid stabilizer

were measured. The stabilizers were an enzyme-modified guar and a non-gelling high methoxy pectin. The stabilizer concentration dependence of the recrystallization rates for both materials was similar in that increasing the concentration resulted in decreasing rates until a point is reached where further addition had no additional effect. That recrystallization rates were reduced by both gelling and non-gelling stabilizers was strongly suggestive that gelation was not a requirement for **recrystallization inhibition** and another more specific mechanism applies, for example a weak interfacial effect such as adsorption or blocking. This behaviour was also seen with locust bean gum and guar and provided further empirical evidence to support the hypothesis that stabilizers adsorb to ice crystal surfaces.

TITLE: Recrystallization in model ice cream solutions as affected by stabilizer concentration.
AUTHOR: Sutton, R. L.; Wilcox, J.
CORPORATE SOURCE: Unilever Res., Colworth House, Sharnbrook MK44 1LQ, UK
SOURCE: Journal of Food Science, (1998) 63 (1) 9-11, 13 ref.
ISSN: 0022-1147
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 36 OF 46 FSTA COPYRIGHT 2003 IFIS on STN
TI Genetic engineering of dairy starter cultures containing an antifreeze gene from Arctic fish.
AN 1995(11):P0053 FSTA
AB An antifreeze protein gene isolated from winter flounder fish was introduced into several commercial dairy starter cultures and its impact on ice **recrystallization inhibition** and cell viability/activity during frozen storage was determined. Antifreeze proteins inhibited ice recrystallization in Lactococcus cremoris AM2. There was no significant loss in cell viability/activity when parental strains were stored at -60.degree.C, fast and slow freezing and storage at -15.degree.C being the most detrimental conditions for all strains. Introduction of antifreeze proteins did not preserve cell viability/activity under these conditions (introduction of plasmids containing the antifreeze analogue fused to lactococcin A or .beta.-galactose consistently reduced cell concn. and activity). [Further abstracts from this Meeting can be traced via the FSTA author index, under IFT Annual Meeting 1995. See FSTA (1995) 27 10A6. From En summ.]

TITLE: Genetic engineering of dairy starter cultures containing an antifreeze gene from Arctic fish.
AUTHOR: Reineccius, K.; McIntyre, D. A.; Stoddard, G. W.; Harlander, S. K.
CORPORATE SOURCE: IFT Annual Meeting 1995; Dep. of Food Sci. & Nutr., Univ. of Minnesota, St. Paul, MN 55108, USA
SOURCE: (1995) p. 185
DOCUMENT TYPE: Conference
LANGUAGE: English

L7 ANSWER 37 OF 46 FSTA COPYRIGHT 2003 IFIS on STN
TI Antifreeze proteins: properties, mechanism of action, and possible applications.
AN 1993(04):A0041 FSTA
AB Aspects of antifreeze proteins, currently attracting the attention of food technologists interested in controlling the way ice crystals grow in frozen foods, are discussed. Antifreeze proteins not only lower the freezing temp., but also retard recrystallization on frozen storage. Since some are now synthesized chemically or by genetic engineering, they no longer have to be isolated from fish bloods. Headings include: Historical developments; Protein properties; Effects on freezing and melting temperatures; How ice crystal growth is effected; Evidence for adsorption at the ice solution interface; Possible practical applications (**recrystallization inhibition**, protecting non-polar fish, agricultural crops, possible usage in foods); and Continuing studies.

TITLE: Antifreeze proteins: properties, mechanism of action, and possible applications.
AUTHOR: Feeney, R. E.; Yin Yeh
CORPORATE SOURCE: Dep. of Food Sci., Univ. of California, Davis, CA 95616, USA
SOURCE: Food Technology, (1993) 47 (1) 82, 84-88, 90, 67 ref.
ISSN: 0015-6639
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 38 OF 46 FSTA COPYRIGHT 2003 IFIS on STN
TI Expression of antifreeze proteins in transgenic plants.
AN 1992(03):B0014 FSTA
AB The quality of frozen fruits and vegetables can be compromised by the damaging effects of ice crystal growth within the frozen tissue. Antifreeze proteins in the blood of some polar fishes have been shown to inhibit ice recrystallization at low concn. In order to determine whether expression of genes of this type confers improved freezing properties to plant tissue, transgenic tobacco and tomato plants were produced which express genes encoding antifreeze proteins. The afa3 antifreeze gene was expressed at high steady-state mRNA levels in leaves from transformed plants, but inhibition of ice recrystallization was not detected in tissue extracts. However, both mRNA and fusion proteins were detectable in transgenic tomato tissue containing a chimeric gene encoding a fusion protein between truncated staphylococcal protein A and antifreeze protein. Furthermore, ice **recrystallization inhibition** was detected in this transgenic tissue.
TITLE: Expression of antifreeze proteins in transgenic plants.
AUTHOR: Hightower, R.; Baden, C.; Penzes, E.; Lund, P.; Dunsmiur, P.
CORPORATE SOURCE: Correspondence (Reprint) address, P. Dunsmuir, DNA Plant Technology Corp., 6701 San Pablo Ave., Oakland, CA 94608, USA
SOURCE: Plant Molecular Biology, (1991) 17 (5) 1013-1021, 37 ref.
ISSN: 0167-4412
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 39 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI **Recrystallization inhibition** of ice grains by using additives adsorbed onto ice surfaces.
AB Addition of poly(vinyl alcohol)(PVOH) to ice slurries is expected to be effective in inhibiting recrystallization of ice. We evaluated the ability of PVOH in inhibiting recrystallization of ice by the observation of ice grains. The results showed that the concentration, molecular weight, and hydrolyzed percent of PVOH affect the recrytallization of ice. We also analyzed the depression of the freezing point by using the Kelvin model, assuming that the adsorption of PVOH molecules onto ice surfaces is based on hydrogen bonding. The analytical results agree with the experimental results qualitatively, indicating that hydrogen bonding is a main cause of the adsorption of PVOH molecules onto ice surfaces. (author abst.)
ACCESSION NUMBER: 1020622401 JICST-EPlus
TITLE: **Recrystallization inhibition** of ice grains by using additives adsorbed onto ice surfaces.
AUTHOR: INADA TAKAAKI; NUDEJIMA SHIN'ICHI
LU S-S
CORPORATE SOURCE: National Inst. Advanced Industrial Sci. and Technol., JPN
Kyushu Univ., JPN
SOURCE: Nippon Dennetsu Shinpojiumu Koen Ronbunshu, (2002) vol. 39th, no. Vol.1, pp. 225-226. Journal Code: F0872C (Fig. 4, Tbl. 1, Ref. 6)
PUB. COUNTRY: Japan

DOCUMENT TYPE: Conference; Short Communication
LANGUAGE: Japanese
STATUS: New

L7 ANSWER 40 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI Evaluation of **Recrystallization Inhibition** in Ice Slurries by Splat Cooling Method.
AB Addition of poly(vinyl alcohol) (PVOH) to ice slurries is expected to be effective in inhibiting recrystallization of ice. We evaluated the ability of **recrystallization inhibition** by the splat cooling method, using PVOH with different concentrations and molecular weights. The results showed that PVOH was effective in inhibiting recrystallization even at a low concentration of 0.01mg/ml. Relatively small molecular weight decreased the ability of recrystaliization inhibition, although molecular weight did not significantly affect the ability within the present experimental conditions. The **recrystallization-inhibition** ability of PVOH could be explained by the adsorption of PVOH molecules onto an ice surface, in the same manner as that of antifreeze protein. (author abst.)
ACCESSION NUMBER: 1020134245 JICST-EPlus
TITLE: Evaluation of **Recrystallization Inhibition** in Ice Slurries by Splat Cooling Method.
AUTHOR: INADA TAKAAKI
LU S-S
CORPORATE SOURCE: National Inst. Advanced Industrial Sci. and Technol.
Kyushu Univ.
SOURCE: Nippon Kikai Gakkai Netsu Kogaku Bumon Koenkai Koen Ronbunshu, (2001) vol. 2001, pp. 167-168. Journal Code: L0417A (Fig. 3, Ref. 6)
PUB. COUNTRY: Japan
DOCUMENT TYPE: Conference; Short Communication
LANGUAGE: Japanese
STATUS: New

L7 ANSWER 41 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI Fundamental Studies on Elementary Technology for Broad area Energy Network System. 10. Inhibition of recrystallization of ice in ice slurries by using antifreeze proteins.
AB Thermal energy storage and transport systems using ice slurry as the medium recently have shown promising characteristics due to the high latent heat and good flow properties of ice slurry. For long-term storage and long-distance transport of ice slurries, however, methods for inhibiting ice recrystallization are necessary. Antifreeze proteins (AFPs) are found in fish and insects living in cold ambient conditions. It is well known that AFPs have the antifreeze effect, which is caused by their adsorption onto ice; they can depress the freezing point of blood below the equilibrium melting point in a noncolligative manner and can retard the rate of recrystallization of ice. In this study, for making ice slurries resistant to recrystallization, we focused on using AFP type I, which has the simplest conformation among various AFPs. We analyzed the surface morphology of ice containing AFP molecules by scanning tunneling microscopy to investigate the mechanism of **recrystallization inhibition**. Furthermore, we examined silane coupling agent and poly(vinyl alcohol) as new additives effective for inhibiting recrystallization in ice slurries, because AFPs are relatively expensive and are easily degraded by bacteria. Our findings are summarized as follows. (1) AFP type I can be used as an effective additive for inhibiting recrystallization in ice slurries even at low concentrations less than 1wt%. (2) The STM images of ice surfaces containing AFP showed that the specific adsorption plane and direction of AFP molecules are {2021} and, <0112> respectively. This indicates that hydrogen bonding plays an important role in the adsorption (3) The STM images of ice containing PVOH molecules showed that PVOH significantly influences the surface morphology of ice and that PVOH molecules have an antifreeze

effect at the molecular level. (author abst.)
ACCESSION NUMBER: 1010381707 JICST-EPlus
TITLE: Fundamental Studies on Elementary Technology for Broad area Energy Network System. 10. Inhibition of recrystallization of ice in ice slurries by using antifreeze proteins.
AUTHOR: INADA TAKAAKI
CORPORATE SOURCE: Mech. Eng. Lab., Agency of Ind. Sci. and Technol.
SOURCE: Kikai Gijutsu Kenkyujo Hokoku (Report of Mechanical Engineering Laboratory), (2001) no. 193, pp. 77-85. Journal Code: F0148A (Fig. 12, Ref. 14)
ISSN: 0286-2255
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article
LANGUAGE: Japanese
STATUS: New

L7 ANSWER 42 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI Microscale Analysis of Ice Crystal Surface Adsorbing Polyvinyl Alcohol.
AB In order to develop energy efficient and reliable ice slurry systems, it would be important to control the creation methods for ice crystals, resistant to recrystallization. In this study scanning tunneling microscopy(STM) had been used to investigate the ice crystal surface adsorbing polyvinyl alcohol(PVA), which showed to be a potential substance as an additive in the ice slurry system and has strong effects on **recrystallization inhibition**. The information about the surface curvature contributes to the understanding of the adsorption process to ice. (author abst.)
ACCESSION NUMBER: 1000742745 JICST-EPlus
TITLE: Microscale Analysis of Ice Crystal Surface Adsorbing Polyvinyl Alcohol.
AUTHOR: LU S-S
INADA TAKAAKI; YABE AKIRA
ZHANG X
CORPORATE SOURCE: South China Univ. Tech., Guangzhou, Chn
Mech. Eng. Lab., Agency of Ind. Sci. and Technol.
Nedo
SOURCE: Nippon Dennetsu Shinpojiumu Koen Ronbunshu, (2000) vol. 37th, no. Vol.3, pp. 985-986. Journal Code: F0872C (Fig. 4, Ref. 7)
PUB. COUNTRY: Japan
DOCUMENT TYPE: Conference; Short Communication
LANGUAGE: Japanese
STATUS: New

L7 ANSWER 43 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI Estimation of Antifreeze Effect by Splat Cooling Method.
AB In this study, splat cooling technique has been used to determine the different **recrystallization inhibition** abilities of pure water, Antifreeze Protein(AFP), Polyvinyl Alcohol(PVA) with various molecular weights and Tween surfactants as the antifreeze solutions. It has been confirmed again that AFPs have the strongest antifreeze effect. The pictures taken by an optical microscope camera showed that PVA and Tween-85 also have strong antifreeze effects and may be the potential substances as additives in the ice slurry system. (author abst.)
ACCESSION NUMBER: 990615062 JICST-EPlus
TITLE: Estimation of Antifreeze Effect by Splat Cooling Method.
AUTHOR: LU S-S
INADA T; ZHANG X; YABE A
GRANDUM S
YOSHIMURA K
CORPORATE SOURCE: South China Univ., Tech., Guangzhou, Chn
Mechanical Engineering Lab., Ibaraki
Inst. Energy Technol., Kjeller, Nor
Fukuoka Ind. Technol. Center, Kitakyusyu

SOURCE: Nippon Dennetsu Shinpojiumu Koen Ronbunshu, (1999) vol. 36th, no. Vol.1, pp. 195-196. Journal Code: F0872C (Fig. 2, Ref. 4)
PUB. COUNTRY: Japan
DOCUMENT TYPE: Conference; Short Communication
LANGUAGE: English
STATUS: New

L7 ANSWER 44 OF 46 JICST-EPlus COPYRIGHT 2003 JST on STN
TI Effect of B on r-value and Recrystallization Behavior of Ti added Ultra-low Carbon Cold-rolled Steel Sheets.
AB It is said that keeping the r-value high is difficult for boron-added IF steel plate. The effect of boron addition on each process of recrystallization and the mechanism of **recrystallization inhibition** by boron addition were investigated.Steel samples with different boron contents (0-0.0024wt%) were prepared by melting and forging.In addition, the coiling simulation was carried out after hot-rolling.The hot rolled plate was then cold-rolled (80%) and annealed.The isothermal annealing and tensile test were applied. The recrystallization behavior was investigated by measuring the hardness and observing the microstructure.The addition of boron brings about 1) suppression of restoration, nucleation, and crystal growth of recrystallization, 2) elevation of recrystallization temperature, and 3) lowering of r-value.Boron segregates at the grain boundary to suppress the nucleation of recrystallization.It is thought that boron added more than 5ppm makes the solid solution with grain to suppress the restoration through the B-Ti interstitial-substitutional atom bonding.
ACCESSION NUMBER: 971001990 JICST-EPlus
TITLE: Effect of B on r-value and Recrystallization Behavior of Ti added Ultra-low Carbon Cold-rolled Steel Sheets.
AUTHOR: HAGA JUN; NAGAMICHI TSUNEAKI; MIZUI NAOMITSU; OKAMOTO ATSUKI
CORPORATE SOURCE: Sumitomo Met. Ind., Ltd., Iron & Steel Res. Lab.
SOURCE: Zairyo to Purosesu (Current Advances in Materials and Processes), (1997) vol. 10, no. 6, pp. 1148-1151. Journal Code: X0994A (Fig. 8, Tbl. 1, Ref. 9)
ISSN: 0914-6628
PUB. COUNTRY: Japan
DOCUMENT TYPE: Conference; Short Communication
LANGUAGE: Japanese
STATUS: New

L7 ANSWER 45 OF 46 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN
TI New cDNA polynucleotide encoding a thermal hysteresis protein which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.
AN 2002-090137 [12] WPIDS
AB WO 200194378 A UPAB: 20020221
NOVELTY - A cDNA polynucleotide (I) comprising a nucleotide sequence for encoding a thermal hysteresis protein which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:
(1) a mRNA polynucleotide (II) comprising a nucleotide sequence for encoding thermal hysteresis proteins derived from the Tenebrionoidea Superfamily transcribed from (I);
(2) a DNA or RNA probe having a sequence complementary or identical to a sequence of contiguous nucleotides for at least a portion of (I);
(3) a recombinant vector containing (I);
(4) a thermal hysteresis protein, preferably an endogenous Type III anti-freeze proteins, derived from the Tenebrionoidea Superfamily which lowers the freezing point of a solution without effecting the melting point of the solution;
(5) a consensus sequence with a nucleotide sequence selected from one

of the four 481 nucleotide sequences (S1-S4) defined in the specification;

(6) a consensus sequence with an amino acid sequence selected from the 133 (S5), 134 (S6), another 134 (S7), another 134 (S8) amino acid sequence defined in the specification;

(7) a consensus sequence with the 133 amino acid sequence (S9) defined in the specification;

(8) a primer having a nucleotide sequence selected from P1-P3;

(9) a method (M1) for producing a polypeptide having antifreeze properties comprising forming a cloning vector with a Tm 12.86 family member gene encoding an antifreeze polypeptide, transferring genes of the cloning vector into DNA of host cell to create a transformed cell, expressing a mRNA sequence and a translated amino acid sequence from the recombinant expression vector, the sequence being isoforms of the Tm 12.86 T. molitor antifreeze polypeptide;

(10) a method (M2) for providing antifreeze or **recrystallization inhibition** properties to a subject formulation comprising incorporating at least 0.1 micrograms to 1 mg of an activated polypeptide into 1 ml of a subject formulation to obtain **recrystallization inhibition** or 1 mg to 25 mg of the activated polypeptide into 1 ml of a subject formulation to thermal hysteresis;

(11) a Tm 12.86 antibody/antiserum;

(12) a **recrystallization inhibition** method (M3) for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising providing a proteinaceous composition in a solvent to form a test solution, flash freezing the solution, raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within the solution, maintaining the frozen solution at the annealing temperature for a length of time sufficient to allow for recrystallization, monitoring the ice crystal grain size changes over time, and determining the presence of functional thermal hysteresis proteins in the solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution;

(13) a method for quantitatively assessing the extent of recrystallization occurring in frozen foods, and the impact of solution additives to inhibit or limit recrystallization according to the process defined in M3; and

(14) a method for quantitatively assessing and comparing the effectiveness of cryoprotective solutions on the extent of recrystallization occurring in cryopreserved cells, tissues, solutions and the like, according to the process defined in M3.

CGCGGATCCCTCACCGACGAACAG (P1);

GAGAGGATAACTAATTGAGCTCGCC (P2); and

CGCGGATCCCTGACCGAGGCACAA (P3).

USE - The activated anti-freeze protein is incorporated into:

(a) plant, produce or fish in an amount sufficient to provide antifreeze protection;

(b) a region of a target tissue in an amount sufficient to provide antifreeze protein controlled limited tumor cell or target tissue cryoinjury during cryosurgery;

(c) hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues by incorporating the protein into the cells, tissue, or cell membranes in a controlled amount sufficient to provide antifreeze protection;

(d) de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, cosmetic products, machinery and plant surfaces; or

(e) a food product in an amount sufficient to provide antifreeze protection to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage.

The polynucleotides for the activated protein are used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatization. The Tm 12.86 antibody/antiserum is used as a screening device to identify positive recombinant plaques containing cloned inserts capable in an expression vector system to produce recombinant products recognized by the antibody/antiserum. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species.

M3 is used for concurrent multiple sample testing of solutions which includes the 'sandwich' method; and application via a 96 well plate device (all claimed).

Dwg.0/8

ACCESSION NUMBER: 2002-090137 [12] WPIDS
DOC. NO. CPI: C2002-027870
TITLE: New cDNA polynucleotide encoding a thermal hysteresis protein which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.
DERWENT CLASS: C06 D16
INVENTOR(S): HORWATH, K L; MEYERS, K L; EASTON, C M; MYERS, K L
PATENT ASSIGNEE(S): (EAST-I) EASTON C M; (HORW-I) HORWATH K L; (MYER-I) MYERS K L; (UYNY) UNIV NEW YORK STATE RES FOUND; (MEYE-I) MEYERS K L
COUNTRY COUNT: 91
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001094378	A1	20011213	(200212)*	EN	231
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
AU 2001075389	A	20011217	(200225)		
US 2002172951	A1	20021121	(200279)		
US 2002173024	A1	20021121	(200279)		

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
WO 2001094378	A1		WO 2001-US18532	20010607
AU 2001075389	A		AU 2001-75389	20010607
US 2002172951	A1	Provisional	US 2000-210446P	20000608
			US 2001-876348	20010607
US 2002173024	A1	Provisional	US 2000-210446P	20000608
			US 2001-876796	20010607

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2001075389	A	Based on	WO 200194378

PRIORITY APPLN. INFO: US 2000-210446P 20000608; US 2001-876348 20010607; US 2001-876796 20010607

L7 ANSWER 46 OF 46 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN
TI New plant anti-freeze protein useful in frozen food products.
AN 1999-458697 [38] WPIDS
AB WO 9937782 A UPAB: 19990922

NOVELTY - A plant anti-freeze protein characterized in that at least 40% of its amino acids are from the group of serine, threonine and asparagine, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a nucleic acid sequence capable of encoding the anti-freeze protein as above;

(2) a frozen food product comprising the anti-freeze protein;

(3) a method of obtaining an anti-freeze protein as above, where the protein is produced by a genetically modified organism; and

(4) a plant, capable of expressing the anti-freeze protein and having an increased frost tolerance.

ACTIVITY - None Given.

MECHANISM OF ACTION - None Given.

USE - The anti-freeze protein can be used in frozen food products, especially frozen confectionery (claimed). Anti-freeze proteins are especially used in food products, which are heated, e.g. by pasteurization, blanching or sterilization prior to freezing. Plants transformed with a nucleic acid sequence encoding the anti-freeze protein have an increased frost tolerance (claimed).

ADVANTAGE - Prior art anti-freeze proteins have not been applied to commercially available food products, due to high costs and complicated process for obtaining the protein. Also prior art anti-freeze proteins have tended to destabilize during processing especially during the pasteurization step. This is overcome by the present anti-freeze protein. The anti-freeze proteins provide an ice particle size following an ice **recrystallization inhibition** assay of 15 mu M or less.

The anti-freeze protein ingredient means that mixes can be frozen under quiescent conditions, e.g. in a shop or home freezer without the formation of unacceptable ice crystal shapes and hence with a texture different to products normally obtained via quiescent freezing.

Dwg.0/0

ACCESSION NUMBER: 1999-458697 [38] WPIDS
DOC. NO. NON-CPI: N1999-343101
DOC. NO. CPI: C1999-134718

TITLE: New plant anti-freeze protein useful in frozen food products.

DERWENT CLASS: B04 C06 D13 D16 P13

INVENTOR(S): JARMAN, C D; SIDEBOTTOM, C M; TWIGG, S; WORRALL, D
PATENT ASSIGNEE(S): (JARM-I) JARMAN C D; (UNIL) UNILEVER PLC; (UNIL) UNILEVER NV

COUNTRY COUNT: 85
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9937782	A2	19990729	(199938)*	EN	39
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW					
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW					
AU 9924188	A	19990809	(200001)		
BR 9814776	A	20001024	(200058)		
EP 1049783	A2	20001108	(200062)	EN	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
CZ 2000002696	A3	20001213	(200103)		
SK 2000001095	A3	20010212	(200112)		
CN 1290300	A	20010404	(200140)		
HU 2001001252	A2	20010828	(200157)		
MX 2000007100	A1	20010301	(200170)		
JP 2002504316	W	20020212	(200215)		39
AU 747087	B	20020509	(200238)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9937782	A2	WO 1998-EP8553	19981223
AU 9924188	A	AU 1999-24188	19981223
BR 9814776	A	BR 1998-14776	19981223
		WO 1998-EP8553	19981223
EP 1049783	A2	EP 1998-966702	19981223
		WO 1998-EP8553	19981223
CZ 2000002696	A3	WO 1998-EP8553	19981223
		CZ 2000-2696	19981223
SK 2000001095	A3	WO 1998-EP8553	19981223
		SK 2000-1095	19981223
CN 1290300	A	CN 1998-813922	19981223
HU 2001001252	A2	WO 1998-EP8553	19981223
		HU 2001-1252	19981223
MX 2000007100	A1	MX 2000-7100	20000720
JP 2002504316	W	WO 1998-EP8553	19981223
		JP 2000-528689	19981223
AU 747087	B	AU 1999-24188	19981223

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9924188	A	Based on	WO 9937782
BR 9814776	A	Based on	WO 9937782
EP 1049783	A2	Based on	WO 9937782
CZ 2000002696	A3	Based on	WO 9937782
HU 2001001252	A2	Based on	WO 9937782
JP 2002504316	W	Based on	WO 9937782
AU 747087	B	Previous Publ.	AU 9924188
		Based on	WO 9937782

PRIORITY APPLN. INFO: GB 1998-1408 19980122